(3) TL-213 See attached. 4/29/03

L2 ANSWER 1 OF 2 REGISTRY COPYRIGHT 2003 ACS
RN 167679-09-6 REGISTRY
CN Licrilite TL 213 (9CI) (CA INDEX NAME)
OTHER NAMES:
CN LC-TL 213
CN **TL 213**
DR 167397-84-4
ENTE A liquid crystal mixture containing superfluorinated biphenyls and terphenyls (Merck Ltd., Poole, Dorset, England)
MF Unspecified
CI MAN
SR CA
LC STN Files: CA, CAPLUS, USPATFULL

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
41 REFERENCES IN FILE CA (1957 TO DATE)
41 REFERENCES IN FILE CAPLUS (1957 TO DATE)

TL-213 in PNLCs, PDLCs, or NCAPs

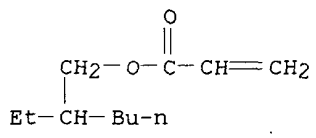
TL-213 in Chemical Abstracts 4/29/03

L101 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:726568 HCAPLUS
DN 135:280638
TI Manufacture of **polymer-dispersed liquid crystal** displays by two-stage photopolymerization under optimized UV intensity
IN Furusako, Shinya; Yamamoto, Masao
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2001272665	A2	20011005	JP 2000-87848	20000328
PRAI JP 2000-87848		20000328		

AB The process employs 2-stage UV radiation in different UV intensity on mixts. of **liq. crystals** (**LC**) and photopolymerizable monomers charged in the gap between pair of substrates. The **LC** form spherical droplets in polymer matrixes in the 1st stage and residual monomers are completely polymd. in the 2nd stage. The substrate temp. in the 2nd radiation stage (T) may be lower than that in the 1st stage. The T may be equal to or higher than the nematic-isotropic transition temp. of the **LC**. The process provides displays with high hysteresis performance and excellent contrast.
IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of **polymer-dispersed liq. crystal** displays by two-stage photopolymn. under optimized UV intensity)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

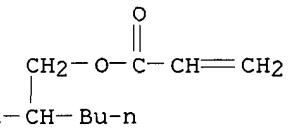
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **103-11-7DP**, 2-Ethylhexyl acrylate, polymers with polyurethane acrylate **oligomers**
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(polymer matrixes; manuf. of **polymer-dispersed liq. crystal** displays by two-stage photopolymn. under optimized UV intensity)
RN 103-11-7 HCAPLUS
CN 2-Propenoic acid, 2-ethylhexyl ester (9CI) (CA INDEX NAME)



L101 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:113212 HCAPLUS
DN 130:189491
TI Holographic **polymer dispersed liquid crystal** optical device and process for manufacture thereof
IN Goto, Tomohisa; Nakata, Daisaku; Hayama, Hiroshi; Sato, Masaharu
PA NEC Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11038392	A2	19990212	JP 1997-191208	19970716
	JP 3047966	B2	20000605		
PRAI	JP 1997-191208		19970716		

AB The **liq. crystal** optical device has a multilayer structure having light-control layers, which consists of regularly aligned **liq. crystal** drops in a polymer resin, alternatively stacked with electrode layers on a light absorbing substrate, and an extn. electrode on a side of a pixel. The **liq. crystal** optical device shows little parallax effect and a high resoln. image.
IT **103-11-7D**, 2-Ethylhexylacrylate, polymer with urethane acrylate **oligomer 167679-09-6**, TL 213
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(holog. **polymer dispersed liq. crystal** optical device)
RN 103-11-7 HCAPLUS
CN 2-Propenoic acid, 2-ethylhexyl ester (9CI) (CA INDEX NAME)



RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L101 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:377432 HCAPLUS
DN 127:26397
TI **Polymer-dispersed liquid crystal** electrooptical device with excellent durability and its manufacture
IN Yazaki, Masayuki; Iizaka, Hideto; Tsuchiya, Yutaka; Kobayashi, Hidekazu; Yamada, Shuhei; Chino, Eiki
PA Seiko Epson Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09101508	A2	19970415	JP 1995-256624	19951003
PRAI	JP 1995-256624		19951003		

AB The device includes a **polymer-dispersed liq. crystal** layer, where an **oligomer** is included in the polymer by bonding. The **oligomer**, preferably a functionalized acrylate **oligomer**, has a more flexible structure than the polymer skeleton. The manufg. process involves these steps; prepg. a mixt. of **liq. crystals** and monomers, adding the **oligomer** to the mixt., and polymg. the monomers to form the **polymer-dispersed liq. crystal** layer. The device shows improved maintainability of the high contrast.
IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(manuf. of photopolymer-dispersed LCD showing good contrast maintainability)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 1 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2003:14425 HCAPLUS
DN 138:80800
TI **Polymer-dispersed liquid crystal** compositions and **liquid crystal** devices operated at low driving voltage
IN Murai, Hideya; Goto, Tomohisa; Saito, Goro; Mimura, Koji; Uehara, Shinichi
PA NEC Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2003003170	A2	20030108	JP 2001-189996	20010622
PRAI JP 2001-189996		20010622		

AB The devices comprise a pair of substrates sandwiching a compn. of **liq. crystals** and photoreactive materials contg. .gtoreq.1 of I, II, III, IV, and V and (meth)acrylates having trifluoromethyl group(s). Markush structures for preferable trifluoromethyl-contg. (meth)acrylates are also given. The devices show uniform and large reflection by low driving voltage, and are suitable as displays and optical switches.
IT **167679-09-6**, TL 213
RL: DEV (Device component use); USES (Uses)
(**liq. crystal** *compn.; low voltage-driving devices comprising* **liq. crystals** *dispersed in (meth)acrylate polymers*)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 2 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2002:929365 HCAPLUS
DN 138:228882
TI Polarization and switching properties of holographic **polymer-dispersed liquid-crystal** gratings. II. Experimental investigations
AU Sutherland, Richard L.; Natarajan, Lalgudi V.; Tondiglia, Vince P.; Chandra, Suresh; Shepherd, Christina K.; Brandelik, Donna M.; Siwecki, Stephen A.; Bunning, Timothy J.
CS Science Applications International Corporation, Dayton, OH, 45431, USA
SO Journal of the Optical Society of America B: Optical Physics (2002), 19(12), 3004-3012
CODEN: JOBPDE; ISSN: 0740-3224
PB Optical Society of America
DT Journal
LA English
AB The authors have performed a detailed study of the polarization properties and switching behavior of holog. **polymer-dispersed liq.-crystal** gratings. A theor. model [R. L. Sutherland, J. Opt. Soc. Am. B 19, 2995(2002)] is compared with a no. of obsd. phenomena in reflection and transmission gratings made with different types of **liq. crystals** under a variety of exptl. conditions. Anomalous polarization effects are described and interpreted. A wide variation of holog. **polymer-dispersed liq.-crystal** grating properties can be explained in terms of the statistics of droplet orientational distributions.
IT **167679-09-6**, TL 213
RL: DEV (Device component use); MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(polarization and electrooptical switching properties of holog. **polymer-dispersed liq.-crystal** gratings with)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L97 ANSWER 3 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2002:626829 HCAPLUS
DN 137:377365
TI Real-time study of the formation of anisotropic reflective H-**PDLC** gratings
AU Natarajan, Lalgudi V.; Bunning, Timothy J.; Tondiglia, V. P.; Sutherland, R. L.
CS Air Force Research Laboratory/MLPJ, Wright-Patterson Air Force Base, OH, 45433-7702, USA
SO Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(2), 542-543
CODEN: ACPPAY; ISSN: 0032-3934
PB American Chemical Society, Division of Polymer Chemistry
DT Journal; (computer optical disk)
LA English
AB H-**PDLCs** are holog. vol. gratings formed via polymn. induced phase sepn. (PIPS) caused by illumination of coherent, interfering laser beams. Formation of H-**PDLC** gratings was studied using pre-polymer solns. contg. vinyl functional monomers, a photoinitiator, a co-initiator and **liq. crystals**. The recording intensity was 100 mW/cm2 and the exposure time was 10 s. The H-**PDLC** starting material was homogeneous and isotropic. As a grating was formed, diffracted light intensity increased from a zero background. Diffracted light of p-polarization only appeared when the grating becomes anisotropic. This is thus a sensitive method of probing the hologram for the presence of macroscopically ordered **liq. crystal** droplet directors. The s-polarized diffraction signal appeared immediately and grew, but the p-polarized signal appeared only after 3 s. It is likely that the initial grating was isotropic and made up of concn. grating as a result of monomer diffusing into the bright regions of the laser illumination. The delayed appearance of the p-polarized grating signified the formation of an anisotropic grating. This was nearly coincident with the onset of light scattering. This may be attributed to the phase sepn. of the nematic droplets. This was also coincident with an inflection on the s-polarized signal. It is likely that the isotropic grating was converted to a two-phase grating. The blue shift of the reflection notch with time obsd. for s- and p-polarization was a result of the combination of an increase in av. index and shrinkage of the grating period as a consequence of conversion of monomer into polymer. The increase in the index would red shift the notch where as the shrinkage would be expected to cause blue shift.
IT **167679-09-6**, TL 213
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(pre-polymer soln.; real-time study of formation of anisotropic reflective holog.-**polymer dispersed liq. crystal** gratings)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L97 ANSWER 4 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2002:501552 HCAPLUS
DN 137:202215
TI Real-time study of the evolution of anisotropic phase separation in H-**PDLC**'s
AU Natarajan, Lalgudi V.; Tondiglia, V. P.; Sutherland, R. L.; Tomlin, D. W.; Bunning, Timothy J.
CS Science Applications International Corporation, Dayton, OH, 45431, USA
SO Materials Research Society Symposium Proceedings (2002), 709(Advances in Liquid Crystalline Materials and Technologies), 183-189
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society

DT Journal
LA English
AB We have investigated the dynamics of formation of a reflection hologram in a photosensitive formulation contg. pre-polymer and **liq. crystal**. Kogelnik's two beam coupling theory of an isotropic material has previously been expanded to account for variations of refractive index .DELTA.n in the x, y, and z directions. This theory predicts a non-zero p-polarized coupling coeff., .kappa.p at 45.degree. internal angle, only when a macroscopic anisotropy in the grating is present. A broadband source was used as a probe to monitor the diffraction efficiencies (DE) during exposure for both s- and p-polarized light. The onset of a macroscopic ordering of the **liq. crystal** is obsd. at the same time as the onset of scattering. We report here the effects of laser writing power on the temporal evolution of s- and p-polarized diffraction efficiency and p-polarized scattered intensity.
IT **167679-09-6**, TL 213
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(**liq.-cryst.**; real-time study of evolution of anisotropic phase sepn. in holog. **polymer-dispersed liq. crystals**)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L97 ANSWER 5 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2002:463557 HCAPLUS
DN 137:385594
TI Effect of the nematic-isotropic phase transition on the electro-optical characteristics of **polymer-dispersed liquid crystal** films
AU Han, J.-W.
CS Department of Physics, Daegu University, Gyungsan, 712-714, S. Korea
SO Journal of the Korean Physical Society (2002), 40(5), 849-855
CODEN: JKPSDV; ISSN: 0374-4884
PB Korean Physical Society
DT Journal
LA English
AB **Polymer-dispersed liq. crystal** (**PDLC**) films consist of micro-droplets of **liq. crystals** dispersed in a polymer matrix. In spite of numerous studies on **PDLC** films, the effects of the temp. on their electro-optical properties have rarely been investigated. In the present work, the dependence of electro-optical properties on the temp. has been studied for several **PDLC** films. We studied two groups of **PDLC** films with different morphologies. Unusual dependences of electro-optical properties on the temp. were obsd. for the **PDLC** films with a thin-walled foam-like morphol., but not for the films with a **LC**-background texture morphol. Exptl. results, and together with other evidence indicate that the unusual behavior arises from the unique effect of the temp.-dependent phase transition under **PDLC** environments. It will be shown that the unusual behavior can be explained by use of a pseudobinary phase diagram and the 'wandering' effect.
IT **167679-09-6**, Licrilite TL 213
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(effect of the nematic-isotropic phase transition on the electro-optical characteristics of **polymer-dispersed liq. crystal** films)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L97 ANSWER 6 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:778146 HCAPLUS
DN 135:337021
TI Reflection **liquid crystal** display with UV curable **polymer-dispersed** nematic **liquid crystal** layer
IN Oomuro, Katsufumi; Sugiura, Norio
PA Fujitsu Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 19 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001296521	A2	20011026	JP 2000-114740	20000417
PRAI	JP 2000-114740		20000417		

AB The reflection LCD has (A) an optical switching layer composed of (a1) a UV-curable **liq. crystal** which forms a 3-dimensional network structure in a pair of substrates and (a2) a nematic **liq. crystal** dispersed in the network and (B) a pair of electrodes formed on the facing surfaces of the substrates, at least one of them being transparent, the electrode structure being formed to generate elec. field whose direction under elec. voltage is uneven in the surface. Also disclosed is a LCD having an optical switching layer same as above, wherein the nematic **liq. crystal** contains a chiral agent in such a way that the chiral pitch (p), the layer thickness of the switching layer (d), and twisting angle (.psi.) satisfies d/p .apprxeq. .psi./360.degree.. Improved viewing angle and elec. characteristics such as threshold elec. voltage and hysteresis are achieved, thereby offering reflection LCD having improved imaging characteristics.
IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(p-type nematic; reflection LCD with UV curable **polymer-dispersed** nematic **liq. crystal** layer, specified electrode structure, and chiral agent)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 7 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:778145 HCAPLUS
DN 135:336734
TI **Polymer-dispersed liquid crystal** optical modulators showing low threshold voltage
IN Sakawa, Sadahiro; Ueki, Satoshi; Mitsui, Seiichi; Minoura, Kiyoshi; Tomikawa, Masahiko; Saneyoshi, Shuji
PA Sharp Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001296520	A2	20011026	JP 2000-111348	20000412
PRAI	JP 2000-111348		20000412		

AB The modulators, suited for **liq. crystal** displays, projection apps., etc., consist of pair of (transparent) substrates possessing polymers, nematic (or cholesteric) and smectic **liq. crystal** mixts., and optional dichroic dyes.
IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(light-modulating layers; **polymer-dispersed liq. crystal** optical modulators showing low threshold voltage)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 8 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:754139 HCAPLUS
DN 135:311046
TI Holographic **polymer-dispersed liquid crystal** devices with fast response and low threshold voltage and their materials
IN Hashimoto, Kengo; Kuratate, Tomoaki; Arai, Naoko; Shibata, Satoshi
PA Sharp Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2001288471	A2	20011016	JP 2000-107014	20000407
PRAI JP 2000-107014		20000407		

AB The materials are composed of nematic **liq. crystals**, monomers, and nonpolymerizable low-mol.-wt. compds. which (i) are substituted with .gtoreq.4 (/mol.) F or (ii) bear F-substituted arom. rings. The F-contg. compds. minimize interaction between the monomer-derived polymers and **liq. crystals** resulting in good switching property.
IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(**polymer-dispersed liq. crystal** displays with fast response and their materials)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 9 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:738555 HCAPLUS
DN 135:296273
TI **Polymer-dispersed liquid crystal** display device suitable for optical imaging device such as projection-type **liquid crystal** display
IN Kosako, Shinya
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2001281642	A2	20011010	JP 2000-91400	20000329
PRAI JP 2000-91400		20000329		

AB The invention relates to a **polymer-dispersed liq. crystal** display device having a **polymer-dispersed liq. crystal** layer between a pair of substrates, wherein the **liq. crystal** is wet on the substrate and wherein the **polymer-dispersed liq. crystal** layer has multiple regions, which have different characteristics on the relation between the applied voltage and the optical transmittance, locating in perpendicular to the substrate planes. The **liq. crystal** display device shows both the improved optical hysteresis and the low driving voltage.
IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(**polymer-dispersed liq. crystal** layer of **liq. crystal** displays)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 10 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:728040 HCAPLUS
DN 136:45601
TI Temperature dependence of electro-optical characteristics of **polymer dispersed liquid crystal** films
AU Han, J.-W.
CS Department of Physics, Taegu University, Kyungsan, 712-714, S. Korea
SO Liquid Crystals (2001), 28(10), 1487-1493
CODEN: LICRE6; ISSN: 0267-8292
PB Taylor & Francis Ltd.
DT Journal
LA English
AB **Polymer dispersed liq. crystal** (**PDLC**) films consist of microdroplets of a **liq. crystal** dispersed in a polymer matrix. Their applications are based on the elec. controllable light scattering properties of the **liq. crystal** droplets. The effects of temp. on the electro-optical properties of **PDLC** films have been rarely investigated. In this work, the light transmission on varying the temp. and frequency. have been studied. It was obsd. that the transmission at a fixed voltage decreased with increasing temp. above 43.degree.C, independent of frequency. Possible origins of this unusual dependence of the transmission on the temp. were examd. It was concluded that cond. effects due to free ions newly created at high temps. could be responsible for the unusual behavior obsd.
IT **167679-09-6**, TL 213
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); PROC (Process)
(temp. dependence of electro-optical characteristics of **polymer dispersed liq. crystal** films)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 12 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:652349 HCAPLUS
DN 136:12431
TI Evolution of anisotropic reflection gratings formed in holographic **polymer-dispersed liquid crystals**
AU Sutherland, R. L.; Tondiglia, V. P.; Natarajan, L. V.; Bunning, T. J.
CS Science Applications International Corporation, Dayton, OH, 45431, USA
SO Applied Physics Letters (2001), 79(10), 1420-1422
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
AB The temporal evolution of an anisotropic reflection grating produced in a holog. **polymer-dispersed liq. crystal** film is studied. This type of grating is preceded in time by an isotropic concn. grating, and the development of the anisotropic grating can be delayed until several seconds after laser exposure. The formation of an anisotropic grating is nearly coincident with the onset of phase sepn. of **liq. crystal** and implies a macroscopic ordering of **liq. crystal** droplet directors. Detailed knowledge of grating evolution may allow in situ control over the polarization sensitivity of the hologram.
IT **167679-09-6**, TL 213
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(evolution of anisotropic reflection gratings formed in holog. **polymer-dispersed liq. crystals**)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L97 ANSWER 13 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:546312 HCAPLUS

DN 135:280396
TI Cell gap optimization and alignment effects in reflective **PDLC** microdisplays
AU Bruyneel, Filip; De Smet, Herbert; Vanfleteren, Jan; Van Calster, Andre
CS ELIS-TFCG/IMEC, Universiteit Gent, Ghent, 9000, Belg.
SO Liquid Crystals (2001), 28(8), 1245-1252
CODEN: LICRE6; ISSN: 0267-8292
PB Taylor & Francis Ltd.
DT Journal
LA English
AB In general this redn. of the cell gap improves the electrooptic properties of a **polymer dispersed liq. crystal** (**PDLC**) in reflective microdisplays. At the interface between the **PDLC** film and the silicon backplane or cover glass, the **LC** mols. have a different alignment from those in the droplets in the interior of the **PDLC** film. This is shown by microscopic observations and the temp. dependency of the brightness and capacitance of the displays. The influence of this alignment effect increases for smaller cell gaps and has an impact on the properties of the **PDLC** . During and after the filling of the displays, a compression and expansion of the cell gap takes place, resp. If the curing of the **PDLC** takes place before the expansion of the cell gap has stopped, transparent areas in the **PDLC** film may occur some time after curing. This effect is caused by the expansion of the cell gap after curing resulting in the vertical alignment of **LC** mols. This can be concluded from microscopic observations and from measurements of the refractive index and cell gap.
IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(cell gap optimization and alignment effects in reflective **polymer dispersed liq. crystal** microdisplays)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L97 ANSWER 14 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:479808 HCAPLUS
DN 135:68623
TI Photopolymerizable compositions, holographic **polymer-dispersed liquid crystal** layers, and manufacture thereof
IN Arai, Shoko; Kuratate, Tomoaki; Tokumaru, Terutaka; Hashimoto, Kengo
PA Sharp Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001181316	A2	20010703	JP 1999-370047	19991227
PRAI	JP 1999-370047		19991227		

AB The compns. comprise polymn. initiators, sensitizing dyes, monomers with n anisotropy (.DELTA.n .gtoreq.0.05), and 1-30% (based on the monomer wt.) polymn. retarders. Also claimed are compns. comprising initiators, sensitizing dyes, monomers forming polymers with .DELTA.n between the monomers .gtoreq.0.05, and 1-30% retarders. Holog. layers manufd. by exposure of the compns. between pair of substrates are also claimed. The process (e.g. photoimaging of the claimed compns.) can be carried out by use of relatively-long-wavelength-light coherent beam as exposure source.
IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(manuf. of holog. **polymer-dispersed liq. crystal** layers for reflective LCD by long-wavelength-beam exposure)
RN 167679-09-6 HCAPLUS

CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 15 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:323112 HCAPLUS
DN 135:83990
TI Thick polymer-stabilized **liquid crystal** films for microwave phase control
AU Fujikake, Hideo; Kuki, Takao; Nomoto, Toshihiro; Tsuchiya, Yuzuru; Utsumi, Yozo
CS NHK Science and Technical Research Laboratories, Setagaya-Ku, Tokyo, 157-8510, Japan
SO Journal of Applied Physics (2001), 89(10), 5295-5298
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
AB This article describes the use of thick polymer-stabilized **liq. crystal** films in a new design for microwave variable phase shifters. A fine .mu.m-order sized **polymer network** was formed in a 100-.mu.m-thick **liq. crystal** film, using a photopolymn.-induced phase-sepn. method to stabilize the mol. alignment of the **liq. crystal**. Measurement of the electrooptic properties of the **liq. crystal** film revealed that the relaxation response time of the **liq. crystal** alignment was drastically decreased by doping the polymer at a concn. of several wt%. A new variable phase shifter composed of a microstrip transmission line (length: 193 mm, width: 200 .mu.m) was also fabricated by using the **liq. crystal** film as the dielec. material. This device exhibited a microwave phase shift of -80.degree. at a frequency of 20 GHz, when a drive voltage of 70 Vrms was applied vertically to the **liq. crystal** film.
IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(thick polymer-stabilized **liq. crystal** films for microwave phase control in phase shifters)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L97 ANSWER 16 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2000:534458 HCAPLUS
DN 133:157744
TI **Liquid crystal** display and its manufacture
IN Kosako, Shinya; Uemura, Tsuyoshi
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 16 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000214443	A2	20000804	JP 1999-330895	19991122
	JP 2000284262	A2	20001013	JP 1999-296945	19991019
	JP 2001042306	A2	20010216	JP 1999-297388	19991019
PRAI	JP 1998-330661	A	19981120		
	JP 1999-17438	A	19990126		
	JP 1999-146869	A	19990526		

AB The invention relates to the **liq. crystal** display utilizing **PDLC** (**polymer dispersed liq. crystal**), wherein the **liq. crystal** droplet size is controlled so that the optical hysteresis is prevented.
IT **167679-09-6**, Licrilite TL 213

RL: DEV (Device component use); USES (Uses)
(**PDLC**-type **liq. crystal** display with size-specified **liq. crystal** droplets)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 17 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 2000:246220 HCAPLUS
DN 133:35479
TI Effects of composition, curing-time, and temperature on the electro-optical characteristics of **polymer-dispersed liquid crystal** films
AU Han, J.-W.; Kang, Tai Jong; Park, Gukhee
CS Department of Physics, Taegu University, Kyungsan, 712-714, S. Korea
SO Journal of the Korean Physical Society (2000), 36(3), 156-163
CODEN: JKPSDV; ISSN: 0374-4884
PB Korean Physical Society
DT Journal
LA English
AB **Polymer-dispersed liq. crystal** (**PDLC**) films consist of microdroplets of **liq. crystal** dispersed in polymer matrix. Their applications are based on the elec. controllable light scattering properties of **liq. crystal** droplets, which are strongly dependent on the morphol. The authors fabricated **PDLC** films based on TL 213/PN 393, and studied phase behavior, switching voltage, response times, contrast ratio, and elec. properties. The exptl. results were analyzed from basic phys. models. Phys. parameters such as switching voltage and response times were numerically estd. for comparison with theor. predicted values.
IT **167679-09-6**, Licrilite TL 213
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(effects of compn., curing-time, and temp. on electro-optical characteristics of **polymer-dispersed liq. crystal** films)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L97 ANSWER 18 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:309363 HCAPLUS
DN 131:37114
TI Improvement in the electro-optical properties of **polymer dispersed liquid crystals**
AU Park, Woo-Sang; Choi, Kee-Seok
CS School Electrical Computer Eng., Inha Univ., Inchon, 402-751, S. Korea
SO Journal of the Korean Physical Society (1999), 34(3), 231-236
CODEN: JKPSDV; ISSN: 0374-4884
PB Korean Physical Society
DT Journal
LA English
AB The electrooptical properties of **polymer dispersed liq. crystals** (**PDLCs**) depend on the dispersion structures and on the alignment of **liq. crystals**, both of which can be controlled by using proper **liq. crystal** /polymer mixts. and process conditions. The authors have greatly improved the electrooptical properties of **PDLCs** by optimizing both the phys. properties of the composite material and the process conditions, such as the cell gap, the concn. ratio, and the UV curing conditions. Under the optimized conditions, **PDLCs** with low threshold voltages of <2.6 V, high contrast ratios of >260, and negligible hysteresis were obtained.
IT **167679-09-6**, TL 213
RL: OCU (Occurrence, unclassified); PRP (Properties); OCCU (Occurrence)
(electro-optical properties and prepn. of **polymer**

dispersed liq. crystals)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L97 ANSWER 19 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:209021 HCAPLUS
DN 130:215985
TI Production method and apparatus of **polymer dispersed liquid crystal** display with excellent high contrast
IN Kosako, Shinya; Uemura, Tsuyoshi; Nakao, Kenji; Yamamoto, Masao; Inoue, Kazuo; Kubota, Hiroshi; Nishiyama, Seiji
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 18 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11084348	A2	19990326	JP 1997-238195	19970903
	JP 3226845	B2	20011105		
	US 6452650	B1	20020917	US 1997-934901	19970922
	US 2002130989	A1	20020919	US 2002-75403	20020215
PRAI	JP 1996-252592	A	19960925		
	JP 1997-134977	A	19970526		
	JP 1997-156303	A	19970613		
	JP 1997-238195	A	19970903		
	US 1997-934901	A3	19970922		

AB The title prodn. method includes a process to inject a photo- and heat-curable **liq. crystal** compn. into a **liq. crystal** cell, a process to heat the **liq. crystal** cell to sep. a polymer and **liq. crystals**, a process to remove the excess **liq. crystals** from the **liq. crystal** cell, and a process to UV-irradiate the **liq. crystal** cell to cure the uncured portions.
IT **167679-09-6**, Licrilite TL 213
RL: TEM (Technical or engineered material use); USES (Uses)
(in **liq. crystal** compn. for manufg. **polymer dispersed liq. crystal** display with excellent high contrast)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 21 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:689591 HCAPLUS
DN 128:17381
TI **Polymer dispersed liquid crystal** (**PDLC**) display apparatus
IN Kobayashi, Hidekazu; Samizu, Kiyohiro; Chino, Eiji; Wu, Jin Jei
PA Seiko Epson Corporation, Japan
SO U.S., 27 pp., Cont.-in-part of U.S. 5,305,126.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5680185	A	19971021	US 1994-228044	19940415
	JP 05119302	A2	19930518	JP 1991-282703	19911029
	JP 3060656	B2	20000710		
	JP 11237617	A2	19990831	JP 1998-307685	19911029
	JP 3225932	B2	20011105		
	JP 11237618	A2	19990831	JP 1998-307686	19911029

	JP 3298522	B2	20020702		
	US 5305126	A	19940419	US 1991-798478	19911126
PRAI	JP 1990-321779	A	19901126		
	JP 1991-18750	A	19910212		
	JP 1991-26024	A	19910220		
	JP 1991-26025	A	19910220		
	JP 1991-59126	A	19910322		
	JP 1991-118619	A	19910523		
	JP 1991-136170	A	19910607		
	JP 1991-140008	A	19910612		
	JP 1991-144583	A	19910617		
	JP 1991-153116	A	19910625		
	JP 1991-167972	A	19910709		
	JP 1991-200716	A	19910809		
	JP 1991-222982	A	19910903		
	JP 1991-282703	A	19911029		
	US 1991-798478	A2	19911126		
	JP 1998-273734	A3	19911029		

OS MARPAT 128:17381

AB A **polymer dispersed liq. crystal** display app. has a **liq. crystal**/polymer medium formed between spatially disposed electrodes formed spatially disposed substrates. The medium includes a polymer phase and a **liq. crystal** phase having optical axes alignable together in a predetd. direction. A light absorption additive is included in the **liq. crystal** phase to provide light absorption when said optical axes are aligned in said predetd. direction so that in the presence or absence of an elec. field applied between said electrodes, two different conditions are achieved comprising alignment and misalignment of the optical axes of the **liq. crystal** phase relative to the polymer phase so that in one condition, a light absorption state is created in the medium and in the other condition, a light scattering state is created in the medium. The polymer phase comprises a network including a plurality of continuous strings of particles connected in helicoid formation due to the addn. of a chiral component, and this network may also include sep. discrete polymer particles. Also a matrix network may be employed. A reflecting surface on the side of the **liq. crystal**/polymer medium opposite to that of incident light will enhance the light scattering and light absorbing properties in either of the two different conditions. Alternatively, the opposite side may be a white surface providing for a high contrast display with light absorption additive in the medium of dark contrast, such as, black dichroic dye.

IT **167679-09-6**, TL 213
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(**polymer dispersed liq. crystal** display devices contg.)

RN 167679-09-6 HCAPLUS

CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 22 OF 32 HCAPLUS COPYRIGHT 2003 ACS

AN 1997:580783 HCAPLUS

DN 127:183415

TI **Polymer dispersed liquid crystal** optical element

IN Yamamoto, Masao

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09185042	A2	19970715	JP 1995-342789	19951228
PRAI	JP 1995-342789		19951228		

AB In the **polymer dispersed liq. crystal** optical element prepd. by using a polymn. initiator to

polymerize a polymer material, soly. parameters (SPinit and SPlc) of the polymn. initiator and the **liq. crystal** material have the following relations: SPinit>SPlc +0.5 or SPinit<SPlc - 0.5; or preferably, SPinit>SPlc + 1 or SPinit<SPlc -1. The polymn. is carried out by applying UV light or heat. The above relations greatly improved charge-retaining characteristics of the **liq. crystal** optical element.

IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(soly. parameter of polymn. initiator and **liq. crystal**)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 23 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:508347 HCAPLUS
DN 127:183435
TI Fast response polymer dispersion type **liquid crystal** display device and its manufacture
IN Nakajima, Junji; Kamimura, Tsuyoshi
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09197380	A2	19970731	JP 1996-3849	19960112
PRAI	JP 1996-3849		19960112		

AB The title display comprises **liq. crystal** droplets dispersed in a polymer resin layer, wherein the droplets located adjacent to an electrode-bearing substrate are flat **liq. crystal** droplets facing their flat surfaces to the electrode-bearing substrate. The device is suitable as a **liq. crystal** display, **liq. crystal** shutter and projection TV.

IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(fast response polymer dispersion type **liq. crystal** display device)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 24 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:502098 HCAPLUS
DN 127:128754
TI **Polymer dispersed liquid crystal** optical element and its manufacture
IN Yamamoto, Masao; Kamimura, Tsuyoshi; Nakao, Kenji
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09146076	A2	19970606	JP 1995-304276	19951122
PRAI	JP 1995-304276		19951122		

AB The **polymer dispersed liq. crystal** optical element comprises **liq. crystal** droplets which consist of a core layer contg. a small amt. of a dissolved polymer matrix material and a shell layer contg. a large amt. of the dissolved polymer matrix material. The process comprises polymn. of a polymerizable compn. mixed with a **liq. crystal** material in a **liq. crystal** cell. The polar **liq. crystal** material

contains CN as a terminal group, and the non-polar **liq. crystal** material contains Cl as a terminal group. Because of the shell and core layers, an interfacial force between the **liq. crystal** droplet and the polymer matrix was reduced, resulting in the improved field response of the optical element.

IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(**polymer dispersed liq. crystal** optical element)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 25 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:491381 HCAPLUS
DN 127:115330
TI **Polymer dispersed liquid crystal** display element and its manufacture
IN Yazaki, Masayuki; Kobayashi, Hidekazu; Chino, Eiki
PA Seiko Epson Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09138412	A2	19970527	JP 1995-298270	19951116
PRAI JP 1995-298270		19951116		

AB The **polymer dispersed liq. crystal** display element has an image region which is formed by a transparent electrode and a metal electrode on the pair of the substrates and is divided into 2 areas, A and B. In both areas, the **liq. crystal** and the polymer adjacent to one of the substrates are aligned to the rubbing direction, in the area A, however, the **liq. crystal** and the polymer gradually rotate in an anticlockwise direction toward the other substrate. In the area B, the **liq. crystal** and the polymer gradually rotate in an clockwise direction toward the other substrate. The **liq. crystal** and the polymer have a structure which has a certain twist angle. Photopolymn. of the **liq. crystal** and a polymer precursor is carried out by directing light with different polarization axes. This **liq. crystal** display device provided an improved viewing angle because of different directionalities of light scattering intensities.

IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(**polymer dispersed liq. crystal** display element and its manuf.)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 26 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:380465 HCAPLUS
DN 127:26396
TI Manufacture of **polymer-dispersed liquid crystal** electrooptical device with good durability
IN Yazaki, Masayuki; Iizaka, Hideto; Tsuchiya, Yutaka; Kobayashi, Hidekazu; Yamada, Shuhei; Chino, Eiki
PA Seiko Epson Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09101507	A2	19970415	JP 1995-256625	19951003

PRAI JP 1995-256625 19951003
AB The manufg. process includes 2-step irradn. of a **liq. crystal** cell contg. compatibilized photopolymerizable monomers with (i) high-intensity light for a short time and next with (ii) low-intensity light for a long time to form a phase-sepd. **liq. crystal**/macromol. layer.
IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); USES (Uses)
(two-step UV irradn. of monomer-dispersed **liq.-crystal** cell for LCD with high reliability)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 28 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:290575 HCAPLUS
DN 127:25758
TI Dependence of the morphology of **polymer dispersed liquid crystals** on the UV polymerization process
AU Carter, S. A.; LeGrange, J. D.; White, W.; Boo, J.; Wiltzius, P.
CS Lucent Technologies, Bell Laboratories, Murry Hill, NJ, 07974, USA
SO Journal of Applied Physics (1997), 81(9), 5992-5999
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
AB Using confocal microscopy, we have studied the morphol. of **polymer dispersed liq. crystals** (**PDLC**) as a function of polymer/**liq. crystal** compn., polymer cure temp., and UV curing power and detd. how this morphol. affects the electro-optical properties. The **PDLC** morphol. consists of a sponge-like texture where spherically shaped **liq. cryst**. domains are dispersed in a polymer matrix. These domains grow as the fraction of **liq. crystal** increases and as the UV curing power decreases. We observe no significant changes in domain size with changes in the curing temp. Instead, high-temp. cures result in coalescence and the formation of elliptical-shaped **liq. crystal** domains. The temp. at which this coalescence starts to be obsd. marks a threshold temp. Tth, above which the switching properties are strongly dependent on morphol. Below Tth the switching properties are largely independent of morphol.
IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(effect of UV polymn. process on morphol. of **polymer dispersed liq. crystals** for display applications)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 29 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:290574 HCAPLUS
DN 127:72927
TI Dependence of the electro-optical properties of **polymer dispersed liquid crystals** on the photopolymerization process
AU LeGrange, J. D.; Carter, S. A.; Fuentes, M.; Boo, J.; Freeny, A. E.; Cleveland, W.; Miller, T. M.
CS Lucent Technologies, Bell Laboratories, Murry Hill, NJ, 07974, USA
SO Journal of Applied Physics (1997), 81(9), 5984-5991
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
AB The dependence of the electro-optical properties of **polymer dispersed liq. crystals** (**PDLC**) on the UV cure of the soln. of monomer and **liq. crystal**

were studied. The kinetics of UV polymn. and its effect on the morphol. of the phase sepd. droplets of **liq. crystal** det. the switching voltage, response time, and luminance of the **PDLC**. Using a series of statistically designed expts., the dependence of these responses on the wt. fraction of **liq. crystal**, the temp. of the cell during cure, and light intensity was mapped. Temp. and compn. are strongly coupled parameters that influence switching voltage, luminance, and response times. Switching voltages are minimized at 4-5 V for an 8 .mu.m cell gap over a large region of temp.-compn. space. An abrupt transition line occurs through that space. On one side of the transition line, voltage increases linearly either as temp. increases or compn. decreases, and on the other side of the line, voltage is const. Analyses of decay times, the slower response time of the **PDLC**, show that the times peak along a line of points in temp.-compn. space that is close to the transition line for increasing switching voltages. These results are presented as contours on the same graphs and are related to the understanding of the phase sepn. process in the **PDLC** mixt.

IT **167679-09-6**, Licrilite TL 213
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(dependence of electrooptical properties of **polymer dispersed liq. crystals** on photopolymn. process)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 30 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:132063 HCAPLUS
DN 126:257006
TI The influences of chiral dopants on electrooptical characteristics of **polymer-dispersed liquid-crystal** displays
AU Sugiyama, Yasushi; Ozone, Kazuhiro; Saito, Susumu
CS Kogakuin Univ., Tokyo, 163-91, Japan
SO Kogakuin Daigaku Kenkyu Hokoku (1996), 81, 97-101
CODEN: KDKHAY; ISSN: 0368-5098
PB Kogakuin Daigaku
DT Journal
LA Japanese
AB The influences of chiral dopants on the contrast ratio, the threshold voltage, and the forward scattering properties of the **polymer-dispersed liq.-crystal** displays were exptl. investigated. A cholesteric **liq. crystal** CB-15 (BDH Co. Ltd.) was used as a chiral dopant and doped by 1-10 wt.% into the nematic mixt. TL-213 (BDH Co. Ltd.) and a UV curable polymer PN-393 (Merck Co. Ltd.). By doping the chiral dopant CB-15, the forward scattering was enhanced and as a consequence, the contrast ratio was improved. The threshold voltage increased with increasing the content of the chiral dopant. Furthermore, as the content of the chiral dopant was increased above 5 wt.%, the wavelength dependence of forward scattering became important.

IT **167679-09-6**, TL 213
RL: TEM (Technical or engineered material use); USES (Uses)
(chiral dopant effects on electrooptical characteristics of **polymer-dispersed liq.-crystal** display devices contg.)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L97 ANSWER 31 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1996:50075 HCAPLUS
DN 124:131387
TI Electrooptical properties of **polymer dispersed** nematic **liquid crystal** cells and influence of chiral dopants
AU Ozone, Kazuhiro; Yamamori, Hiroaki; Saito, Susumu
CS Kogakuin Univ., Tokyo, 163-91, Japan

SO Kogakuin Daigaku Kenkyu Hokoku (1995), 79, 79-83
CODEN: KDKHAY; ISSN: 0368-5098
PB Kogakuin Daigaku
DT Journal
LA Japanese
AB Exptl. investigations were carried out on the electrooptical properties of **polymer dispersed** nematic **liq. crystal** cells. In this expt., the nematic **liq. crystal** TL 213 (BDH Co. Ltd.) and the UV-curable polymer PN-393 (Merck Co. Ltd.) were used. The influence on the contrast ratio and the threshold voltage of the mixing ratio of nematic **liq. crystal** and polymer, the cell thickness and the chiral dopant were investigated. It has been found that the optimum mixing ratio of nematic **liq. crystal** cells and polymer is 8:2 and that the doping of the chiral dopant CB-15 (BDH Co. Ltd.) by 2 wt.% to 10 wt.% in nematic **liq. crystal** cells results in a significant improvement of contrast ratio.
IT **167397-84-4**, TL 213
RL: TEM (Technical or engineered material use); USES (Uses)
(electrooptical properties of **polymer dispersed liq. crystal** display cells contg.)
RN 167397-84-4 HCAPLUS

L97 ANSWER 32 OF 32 HCAPLUS COPYRIGHT 2003 ACS
AN 1995:669789 HCAPLUS
DN 123:182172
TI Film formation parameters affecting the electro-optic properties of low-voltage **PDLC** films
AU Nolan, P.; Jolliffe, E.; Coates, D.
CS Merck Ltd., Dorset, BH15 IHX, UK
SO Proceedings of SPIE-The International Society for Optical Engineering (1995), 2408(Liquid Crystal Materials, Devices and Displays), 2-13
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
AB **Polymer dispersed liq. crystals** (**PDLC**) received much attention recently due to their potential applications in projection and direct view displays. The effect of curing conditions, i.e. UV lamp power, exposure time and curing temp., on the electrooptic properties of **PDLC** films are reported for both direct view and projection applications. The variation of electrooptic properties with variation of film thickness for different **liq. crystal** mixts. is reported. An optimum curing temp. and lamp power exist at which an optimum contrast can be achieved for a given film thickness.
IT **167679-09-6**, Licrilite TL 213
RL: MOA (Modifier or additive use); USES (Uses)
(film formation parameters affecting electrooptic properties of low-voltage **polymer dispersed** films contg.)
RN 167679-09-6 HCAPLUS
CN Licrilite TL 213 (9CI) (CA INDEX NAME)

Cellulose esters or acetates in PNLCs, PDLCs or NCAPs' 4/29/03

L91 ANSWER 1 OF 13 HCAPLUS COPYRIGHT 2003 ACS
AN 2002:306169 HCAPLUS
DN 137:202184
TI New **PDLC** systems for thermal sensing
AU Pranga, Mariusz; Czuprynski, Krzysztof L.; Klosowicz, Stanislaw J.
CS Inst. of Chem., Military Tech. Acad., Warsaw, 00-908, Pol.
SO Biuletyn Wojskowej Akademii Technicznej (2002), 51(1), 45-61
CODEN: BWATFP; ISSN: 1234-5865
PB Wojskowa Akademia Techniczna
DT Journal
LA English
AB The results of studies on a prepn. thermosensitive **polymer-dispersed liq. crystal** (**PDLC**) film by solvent-induced phase sepn. are described. **Liq.-cryst.** mixts. and properties of resp. composites are described in detail. The obtained results are discussed from an application point of view.
IT **9004-35-7**, **Cellulose** acetate **9004-36-8**, **Cellulose** acetate butyrate **9004-70-0**, **Cellulose** nitrate
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(new **polymer-dispersed liq. crystal** film systems for thermal sensing)
RN 9004-35-7 HCAPLUS
CN Cellulose, acetate (9CI) (CA INDEX NAME)

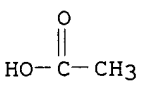
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 64-19-7
CMF C2 H4 O2

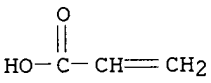


L91 ANSWER 2 OF 13 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:419021 HCAPLUS
DN 135:167431
TI **Cellulose** color effects copied from nature with natural materials: solid opalescent films originated from **cellulose** derivatives
AU Maxein, Georg; Muller, Manfred; Zentel, Rudolf
CS Department of Chemistry and Institute of Materials Science, Wuppertal, D-42097, Germany
SO ACS Symposium Series (2001), 786(Biopolymers from Polysaccharides and Agroproteins), 61-70
CODEN: ACSMC8; ISSN: 0097-6156
PB American Chemical Society
DT Journal
LA English
AB Solid opalescent films, which owe their color to Bragg reflection of visible light, can be prepd. from cholesteric **cellulose** derivs. Both thermotropic and lyotropic systems can be used. They are accessible from com. products by simple reactions and a subsequent photo polymn. (crosslinking). We found **cellulose** carbanilates and hydroxypropylcellulose esters most promising. By careful selection of the substitutents, the degree of substitution and the mol. wt., systems with brilliant reflection colors are available.
IT **9004-34-6D**, **Cellulose**, reaction product with phenylisocyanate, m-chlorophenylisocyanate, or m-trifluoromethylphenylisocyanate, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(semi-interpenetrating network; solid opalescent films originated from lyotropic cholesteric **cellulose** derivs.)
RN 9004-34-6 HCAPLUS
CN Cellulose (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **353522-83-5**
RL: PRP (Properties)
(solid opalescent films originated from thermotropic cholesteric **cellulose** derivs.)
RN 353522-83-5 HCAPLUS
CN Cellulose, 2-hydroxypropyl ether, propanoate 2-propenoate (9CI) (CA INDEX NAME)

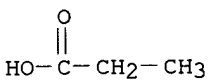
CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 79-09-4
CMF C3 H6 O2



CM 3

CRN 9004-64-2
CMF C3 H8 O2 . x Unspecified

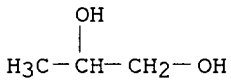
CM 4

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 5

CRN 57-55-6
CMF C3 H8 O2



L91 ANSWER 3 OF 13 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:297401 HCAPLUS
DN 135:83508
TI Light scattering studies in **cellulose** derivative based **PDLC** type cells
AU Almeida, P. L.; Cidade, M. T.; Godinho, M. H.; Ribeiro, A. C.; Figueirinhas, J. L.
CS Dept. Ciencia dos Materiais and CENIMAT, FCT/UNL, Monte de Caparica, 2825-114, Port.
SO Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (2001), 359, 79-88
CODEN: MCLCE9; ISSN: 1058-725X
PB Gordon & Breach Science Publishers
DT Journal
LA English
AB The authors analyzed the light scattering pattern produced by the **cellulose** deriv. based **PDLC** type cells [1-5] when illuminated at normal incidence by a laser light beam. The voltage dependence of the scattering pattern was obtained along with the voltage dependence of the cells transmission coeff. Two different types of cells were studied, one assembled with films of hydroxypropylcellulose (HPC), and the other assembled with films of HPC and **cellulose** acetate (CA) (9.1% wt./wt.), both cross linked and not. The presence of CA, which was seen to affect the films' surface increasing significantly its rugosity [6], is correlated with the scattering patterns obtained. The light scattering results are globally analyzed in terms of their implications for the optimization of electrooptical properties of these types of cells.
IT **9004-34-6**, **cellulose**, properties
RL: PRP (Properties)
(derivs.; light scattering studies in **cellulose** deriv. based **PDLC** type cells)
RN 9004-34-6 HCAPLUS
CN Cellulose (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **9004-35-7**, **Cellulose** acetate **9004-64-2**, Hydroxypropylcellulose
RL: PRP (Properties)
(light scattering studies in **cellulose** deriv. based **PDLC** type cells)
RN 9004-35-7 HCAPLUS
CN Cellulose, acetate (9CI) (CA INDEX NAME)

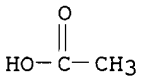
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 64-19-7
CMF C2 H4 O2



L77 ANSWER 10 OF 19 HCAPLUS COPYRIGHT 2003 ACS
AN 2000:417798 HCAPLUS
DN 134:101487
TI **Polymer-dispersed liquid crystals** for thermosensitive foils and paints
AU Pranga, M.; Czuprynski, Krzysztof L.; Klosowicz, Stanislaw J.
CS Military Acad. Technol., Warsaw, Pol.
SO Proceedings of SPIE-The International Society for Optical Engineering (2000), 4147(Liquid Crystals), 394-399
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 42, 75
AB Thermosensitive **polymer-dispersed liq. crystal** films were prepd. by mixing the org. **liq. crystal** with the polymer matrix via solvent-induced phase sepn. The chiral nematic **liq. crystals** are alkylphenyl and alkylbiphenyl esters of alkoxybenzoic acids and the polymers used are: poly(vinyl chloride), **cellulose** acetate butyrate, **cellulose** acetate, **cellulose** nitrate, poly(vinyl acetate), and poly(vinyl acetal). The composites show long term stability of reflected light, adjustable heat sensitivity, and better linear resoln. than that of conventional thermog. foils based on cholesterol esters. The mixts. are suitable for visualization temp. changes from -20 to +100.degree. with wide color response, which can be tuned by varying components in the mixt.
IT **9004-35-7**, **Cellulose** acetate **9004-36-8**, **Cellulose** acetate butyrate **9004-70-0**, **Cellulose** nitrate
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(prepn. of **liq. crystal**-polymer mixts. by solvent-induced phase sepn. and thermochromism and optical response of composites toward use in foils and paints)
RN 9004-35-7 HCAPLUS
CN Cellulose, acetate (9CI) (CA INDEX NAME)

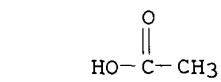
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 64-19-7
CMF C2 H4 O2



RN 9004-36-8 HCAPLUS
CN Cellulose, acetate butanoate (9CI) (CA INDEX NAME)

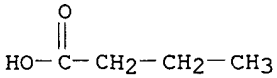
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

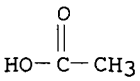
CM 2

CRN 107-92-6
CMF C4 H8 O2



CM 3

CRN 64-19-7
CMF C2 H4 O2



L91 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:661627 HCAPLUS
DN 132:27849
TI **Liquid crystal** and **cellulose** derivatives composites used in electro-optical applications
AU Godinho, M. H.; Costa, C.; Figueirinhas, J. L.
CS Dept. de Ciencia dos Mat. and CENIMAT, F.C.T., U.N.L., Monte de Caparica, 2825, Port.
SO Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (1999), 331, 2033-2039
CODEN: MCLCE9; ISSN: 1058-725X
PB Gordon & Breach Science Publishers
DT Journal
LA English
AB We have performed a preliminary study by light transmission of the electrooptical behavior of several cells prepd. either from hydroxypropylcellulose (HPC) or HPC with **cellulose** acetate (CA) (1% wt./wt.) cross linked in both cases with 1,4-diisobutanocyanate (BDI) (7%wt./wt.) and different concns. of a com. nematic **liq. crystal** mixt. with varying optical anisotropies. The optical response when the cells are subjected to a short a.c. elec. pulse of variable intensity is presented and correlated using CA and the optical anisotropy of **liq. crystal** mixt. used in the cells.
It was found that cells with CA exhibit much larger contrasts but also a small decrease of the max. light transmission when compared with cells without CA. The anisotropy of the **liq. crystal** mixt. has a strong influence on the electrooptical behavior of the cells prepd. with CA. From SEM, we found in the surface of the solid films prepd. with CA some heterogeneities and porous (2.mu.m) that can be responsible for the strong increase in the contrast obsd.
IT **9004-35-7**, **Cellulose** acetate **9004-64-2**, Hydroxypropylcellulose
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(electro-optical effects in **liq. crystal**/**cellulose** deriv. composites)
RN 9004-35-7 HCAPLUS
CN Cellulose, acetate (9CI) (CA INDEX NAME)

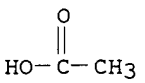
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 64-19-7
CMF C2 H4 O2



L91 ANSWER 8 OF 13 HCAPLUS COPYRIGHT 2003 ACS
AN 1998:531571 HCAPLUS
DN 129:276621
TI Color-effect copied from nature with natural materials-solid opalescent films originated from **cellulose** derivatives
AU Maxein, G.; Muller, M.; Szych, E.; Zentel, R.
CS Institute of Materials Science, University of Wuppertal, Wuppertal, 42097, Germany
SO Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1998), 39(2), 115-116
CODEN: ACPPAY; ISSN: 0032-3934
PB American Chemical Society, Division of Polymer Chemistry
DT Journal
LA English
AB Cholesteric phases, both lyotropic and thermotropic, of various **cellulose** derivs. show selective reflexion of visible light. Lyotropic aryl urethane derivs. in acrylate and diacrylate solvents and thermotropic acrylate propionate derivs. were used to form solid films by polymn. of the acrylate solvents/groups. The selective reflexion of the polymers after crosslinking is as sharp as before and only the lyotropic systems show a recognizable shift to shorter wavelength. The cholesteric structure and the pitch of the helix is permanently frozen in and therefore the selective reflexion of these films is temp. independent. The materials can be used as copy-save printing colors or optical applications such as polarization filters.
IT **214222-70-5P**
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(selective optical reflection in lyotropic and thermotropic **cellulose** urethane- and hydroxypropylcellulose-polyacrylate crosslinked polymers)
RN 214222-70-5 HCAPLUS
CN Cellulose, 2-hydroxypropyl ether, propanoate, 2-propenoate, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 214222-69-2
CMF C3 H8 O2 . x C3 H6 O2 . x C3 H4 O2 . x Unspecified

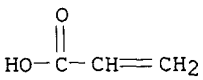
CM 2

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

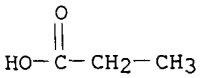
CM 3

CRN 79-10-7
CMF C3 H4 O2



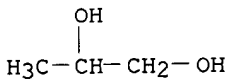
CM 4

CRN 79-09-4
CMF C3 H6 O2



CM 5

CRN 57-55-6
CMF C3 H8 O2



L91 ANSWER 9 OF 13 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:126873 HCAPLUS
DN 126:238953
TI Solid opalescent films originating from urethanes of **cellulose**
AU Mueller, Manfred; Zentel, Rudolf; Keller, Harald
CS Institut Organische Chemie, Universitaet Mainz, Mainz, D-55099, Germany
SO Advanced Materials (Weinheim, Germany) (1997), 9(2), 159-162
CODEN: ADVMEW; ISSN: 0935-9648
PB VCH
DT Journal
LA English
AB Lyotropic mesophases based on aryl urethanes of **cellulose** in com. available mono- or bifunctional derivs. of acrylic and methacrylic acids were described. The acrylic solvents were polymd. photochem. giving opalescent solid films (100 cm2) retaining the selective reflection. A cholesteric semi-interpenetrating network of **cellulose** urethanes in polyacrylates was obtained. Patterning by photocrosslinking at different temps. was demonstrated.
IT **9004-35-7D**, **Cellulose** acetate, hydrolyzed, reaction product with Ph isocyanate and 3-chlorophenyl isocyanate
9004-48-2D, **Cellulose** propionate, hydrolyzed, reaction product with Ph isocyanate and 3-chlorophenyl isocyanate
37251-21-1, **Cellulose** phenyl carbamate
114265-05-3, **Cellulose** 3-chlorophenyl carbamate
188550-23-4, **Cellulose** (3-chlorophenyl)carbamate phenylcarbamate
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PROC (Process); USES (Uses)
(solid opalescent films originating from **cellulose** urethanes and their patterning in polyacrylate matrix by photocrosslinking)
RN 9004-35-7 HCAPLUS
CN Cellulose, acetate (9CI) (CA INDEX NAME)

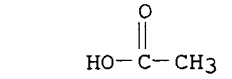
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 64-19-7
CMF C2 H4 O2



RN 9004-48-2 HCAPLUS
CN Cellulose, propanoate (9CI) (CA INDEX NAME)

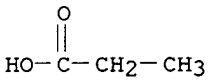
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

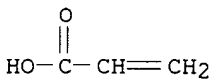
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 79-09-4
CMF C3 H6 O2



L91 ANSWER 11 OF 13 HCAPLUS COPYRIGHT 2003 ACS
AN 1995:817074 HCAPLUS
DN 123:229248
TI Unconventional anisotropic polymer/crystalline phase composites
AU Ulanski, J.; Wojciechowski, P.; Kryszewski, M.
CS Polymer Institute, Technical University Lodz, Lodz, 90-924, Pol.
SO MCLC S&T, Section B: Nonlinear Optics (1995), 9(1-4), 203-11
CODEN: MCLOEB; ISSN: 1058-7268
PB Gordon & Breach
DT Journal
LA English
AB Two unconventional methods of obtaining anisotropic polymer composites for potential use in nonlinear optics are presented:. (I)formation of anisotropic **polymer networks** by photopolymn. of monomer in **liq. cryst.** (**LC**) media, (ii) formation of highly oriented cryst. networks in polymer matrixes by using the so-called zone-casting technique. (I)Originally designed lyotropic **liq. cryst.** soln. of hydroxypropylcellulose in acrylic acid as a polymerizable solvent was used as a starting material. It was shown, that the **LC** organization can be immobilized by the photopolymn. of vinyl monomers incorporated in the system leading to a formation of the **polymer network**. Several phys. measurements were performed including x-ray scattering, thermo-optical anal. and microscopic observations (ii) The zone casting technique, originally elaborated for obtaining anisotropically conducting composites, allows to produce in a continuous way a polymer films contg. parallel oriented charge-transfer complex crystals. The resulting films show very high elec. and optical anisotropy. This technique can be applied for prodn. of materials with 2nd-order nonlinear optical properties where the orientation of mols. in macroscopic samples is required.
IT **79-10-7**, Acrylic acid, reactions **9004-64-2**, Hydroxypropylcellulose
RL: RCT (Reactant); RACT (Reactant or reagent)
(unconventional anisotropic polymer/cryst. phase composites prepd. using)
RN 79-10-7 HCAPLUS
CN 2-Propenoic acid (9CI) (CA INDEX NAME)



RN 9004-64-2 HCAPLUS
CN Cellulose, 2-hydroxypropyl ether (9CI) (CA INDEX NAME)

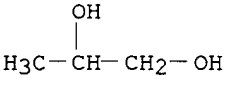
CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 57-55-6
CMF C3 H8 O2



L77 ANSWER 1 OF 19 HCAPLUS COPYRIGHT 2003 ACS
AN 2002:665198 HCAPLUS
DN 138:222172
TI Cross-linked hydroxypropylcellulose films: mechanical behaviour and electro-optical properties of **PDLC** type cells
AU Almeida, P. L.; Tavares, S.; Martins, A. F.; Godinho, M. H.; Cidade, M. T.; Figueirinhas, J. L.
CS Departamento de Ciencia dos Materiais and CENIMAT, FCT/UNL, Monte de Caparica, 2829-516, Port.
SO Optical Materials (Amsterdam, Netherlands) (2002), 20(2), 97-100
CODEN: OMATET; ISSN: 0925-3467
PB Elsevier Science B.V.
DT Journal
LA English
CC 37-5 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 75, 76
AB We study the effect of the amt. of crosslinking agent upon the mech. and electro-optical behavior of several cells prepd. from hydroxypropyl **cellulose** crosslinked with .ltoreq.12.3 wt.% 1,4-diisocyanatobutane. The tensile properties and the sol/gel fractions were obtained as a function of the amt. of the crosslinking agent used to prep. the solid films. Young's modulus appears to be const., over the range of concns. studied. The electro-optical **polymer-dispersed liq. cryst.** (**PDLC**) cells prepd. with a nematic **liq. crystal** (E7) were analyzed by light transmission. The crosslinking agent, at the percentages used, has a strong influence on the cell's contrast but not on the cell's max. transmission or turn-on voltage, while the film thickness acts mainly on the max. transmission and turn-on voltage. The mech. properties of the films are important for applications where a flexible substrate is used. The results obtained point out ways for the realization of an optimum electro-optical cell.
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(prepn. and properties of **cellulosic** polyurethanes for **polymer-dispersed liq. cryst.** cells)
RN 206009-53-2 HCAPLUS
CN Cellulose, 2-hydroxypropyl ether, polymer with 1,4-diisocyanatobutane (9CI) (CA INDEX NAME)

CM 1

CRN 4538-37-8
CMF C6 H8 N2 O2

CM 2

CRN 9004-64-2
CMF C3 H8 O2 . x Unspecified

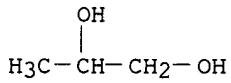
CM 3

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 4

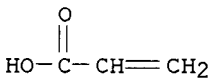
CRN 57-55-6
CMF C3 H8 O2



L70 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2003 ACS
AN 1985:47569 HCAPLUS
DN 102:47569
TI Crosslinked cholesteric network from the acrylic acid ester of (hydroxypropyl)cellulose
AU Bhadani, S. N.; Gray, D. G.
CS Pulp and Paper Res. Inst. Canada, McGill Univ., Montreal, ON, H3A 2A7, Can.
SO Molecular Crystals and Liquid Crystals (1984), 102(8-9), 255-60
CODEN: MCLCA5; ISSN: 0026-8941
DT Journal
LA English
AB Hydroxypropyl cellulose acrylate (I) [**94187-94-7**] with 2.2 ester groups per anhydroglucose unit, prepd. by reacting acryloyl chloride with hydroxypropyl cellulose, formed a thermotropic cholesteric mesophase with visible reflection bands at temps. between ambient and 60.degree.. When the I film was subjected to UV irradn. for 5 h, the reflection color did not change with subsequent changes in temp., and irradiated film was strongly birefringent under the polarizing microscope, indicating the formation of crosslinked **polymer network** with locked in cholesteric organization.
IT **94187-94-7P**
RL: PREP (Preparation)
(UV radiation-crosslinked, cholesteric film, formation of)
RN 94187-94-7 HCAPLUS
CN Cellulose, 2-hydroxypropyl ether, 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2



CM 2

CRN 9004-64-2
CMF C3 H8 O2 . x Unspecified

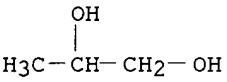
CM 3

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 4

CRN 57-55-6
CMF C3 H8 O2

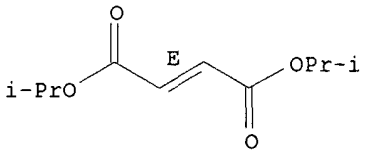


L66 ANSWER 17 OF 17 HCAPLUS COPYRIGHT 2003 ACS
AN 1994:558735 HCAPLUS
DN 121:158735
TI Component dependence of aggregation structure and light scattering properties of polymer/**liquid crystal** composite films
AU Park, Kwansun; Kikuchi, Hirotsugu; Kajiyama, Tisato
CS Faculty of Engineering, Kyushu Univ., Fukuoka, 812, Japan
SO Polymer Journal (Tokyo, Japan) (1994), 26(8), 895-904
CODEN: POLJB8; ISSN: 0032-3896
DT Journal
LA English
AB The aggregation structure and electrooptical properties of poly(dialkyl fumarate)/E8 **liq. crystal** composite films were investigated. The aggregation structure of the composite film strongly depended on the components ratio of matrix polymer and low mol. wt. **liq. cryst.** materials. The **continuous** E8 **phase** was formed in a 3-dimensional **polymer network** when the E8 wt. fraction was .gtorsim.50%. Also, the aggregation structure of the composite film could be controlled by controlling the solvent evapn. velocity during the film prepn. process. The finer matrix polymer fibrils were formed in the case of the faster solvent evapn. velocity. The composite films exhibited reversible light scattering-light transmission switching upon elec. field-off and -on states, resp. The light scattering properties of the composite film with a **continuous** E8 **phase** were strongly dependent on the spatial distortion of nematic directors as well as the mismatch in refractive indexes between matrix polymer and E8 upon an elec. field-off state. By controlling the polymeric wall thickness of the composite film below the wavelength (632.8 nm) of an incident He-Ne laser beam, the composite films showing a remarkably high transmittance and contrast were successfully realized.
IT **39050-69-6**, Poly(diisopropyl fumarate) **41700-07-6**, Poly(di-tert-butyl fumarate) **105659-64-1**
RL: PRP (Properties)
(mixts. with **liq. crystals**, electrooptical properties of)
RN 39050-69-6 HCAPLUS
CN 2-Butenedioic acid (2E)-, bis(1-methylethyl) ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 7283-70-7
CMF C10 H16 O4

Double bond geometry as shown.

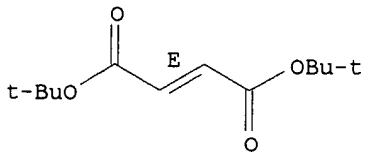


RN 41700-07-6 HCAPLUS
CN 2-Butenedioic acid (2E)-, bis(1,1-dimethylethyl) ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 7633-38-7
CMF C12 H20 O4

Double bond geometry as shown.

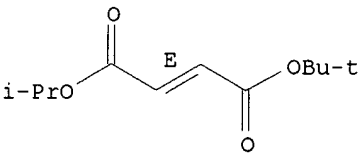


RN 105659-64-1 HCAPLUS
CN 2-Butenedioic acid (2E)-, 1,1-dimethylethyl 1-methylethyl ester, homopolymer (9CI) (CA INDEX NAME)

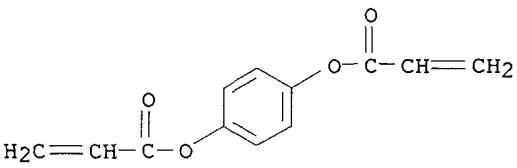
CM 1

CRN 105659-63-0
CMF C11 H18 O4

Double bond geometry as shown.



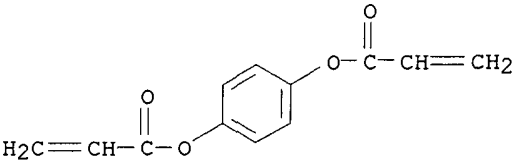
L66 ANSWER 16 OF 17 HCAPLUS COPYRIGHT 2003 ACS
AN 1995:989854 HCAPLUS
DN 124:101717
TI Studies of a polymer dispersed ferroelectric **liquid crystal**
AU Guymon, C. Allan; Hoggan, Erik N.; Bowman, Christopher N.
CS Dep. of Chemical Engineering, Univ. of Colorado, Boulder, CO, 80302-0424, USA
SO Materials Research Society Symposium Proceedings (1995), 377(Amorphous Silicon Technology-1995), 865-70
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
AB Ferroelec. **liq. crystals** (FLCs) have shown great potential for use in electrooptic and display technol. due to their inherently fast switching speeds. Recently, within this area a great deal of attention has also been given to FLCs dispersed within a **polymer network**. Adding the polymer may act to enhance certain electrooptic properties and will substantially increase the mech. strength of the FLC system. This study examines the effects of adding either a diacrylate monomer or a **polymer network** to a FLC mixt. of known compn. The monomer depresses the phase transition temps. to more ordered phases for both first and second order transitions and causes a marked decrease in the amt. of **liq. crystal** which exhibits typical transition behavior. During polymn. the network phase separates forming two co-**continuous phases** and allows the **liq. crystal** transitions to return close to values seen in the pure **liq. crystal** mixt. The ferroelec. polarization decreases in both monomer and polymer systems. As a result of this decrease, the rotational viscosity decreases for these same samples. Max. double bond conversions and polymn. rate maxima increase with monomer concn. until satn. of monomer in the **liq. crystal** is reached. The rate maxima then decreases as the monomer must dissolute into the **liq. crystal** and diffuse to the reactive sites.
IT **6729-79-9**, p-Phenylene diacrylate **32535-62-9**, p-Phenylene diacrylate homopolymer
RL: PRP (Properties)
(effects of adding diacrylate monomer or **polymer network** to ferroelec. **liq. crystal** compn.)
RN 6729-79-9 HCAPLUS
CN 2-Propenoic acid, 1,4-phenylene ester (9CI) (CA INDEX NAME)

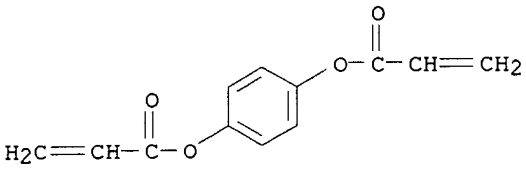


RN 32535-62-9 HCAPLUS
CN 2-Propenoic acid, 1,4-phenylene ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 6729-79-9
CMF C12 H10 O4

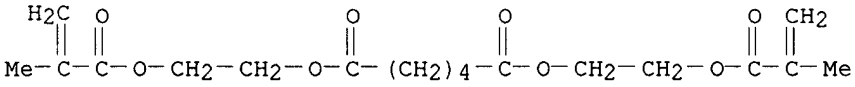




L66 ANSWER 12 OF 17 HCAPLUS COPYRIGHT 2003 ACS
AN 1998:179326 HCAPLUS
DN 128:180931
TI Preparation and studies on the properties of **polymer network** dispersed **liquid crystal** composite films
AU Wang, Mingzhe; Bai, Ruke; Zou, Yingfang; Pan, Caiyuan
CS Dep. Poly. Sci. & Engineering, Univ. Science Technology China, Hefei, 230026, Peop. Rep. China
SO Gongneng Gaofenzi Xuebao (1997), 10(4), 449-455
CODEN: GGXUEH; ISSN: 1004-9843
PB Huadong Huagong Xueyuan Chubanshe
DT Journal
LA Chinese
AB This paper reported a new matrix for prepg. **polymer network** dispersed **liq. crystal** (PNDLC) composite films, and studied the effects of compn. of matrix materials, kinds and content of **liq. crystal**, polymn. temp., intensity of UV light and polymn. time, etc., on the properties of PNDLC materials. The PNDLC was prepd. from bisphenol A dimethacrylate, bis(hydroxyethyl methacrylate) adipate and E-7 **liq. crystal**. The optimal prepn. conditions and PNDLC composite materials with good electro-optical properties were obtained. Scanning electronic microscopy (SEM) proved that the materials were composed of two **continuous phases** and belonged to polymer-ball type morphol.
IT **193224-27-0P**, Bisphenol A dimethacrylate-bis(2-hydroxyethyl methacrylate) adipate copolymer
RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(prepn. and properties of bisphenol A dimethacrylate-bis(hydroxyethyl methacrylate) adipate copolymer-dispersed **liq. crystal** composite films)
RN 193224-27-0 HCAPLUS
CN Hexanedioic acid, bis[2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl] ester, polymer with (1-methylethylidene)di-4,1-phenylene bis(2-methyl-2-propenoate) (9CI) (CA INDEX NAME)

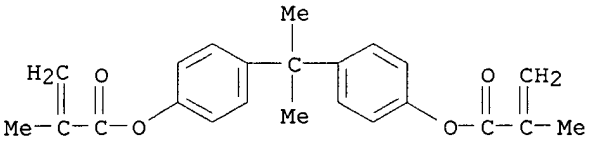
CM 1

CRN 4272-13-3
CMF C18 H26 O8



CM 2

CRN 3253-39-2
CMF C23 H24 O4



(4) -polymerizable oligomers or monomers listed.

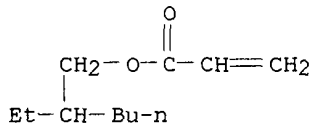
L94 ANSWER 3 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:900179 HCAPLUS
DN 136:45770
TI Polymer **liquid crystal** composite comprising mixture of ferroelectric and antiferroelectric **liquid crystals** used in **liquid crystal** display
IN Jeon, Young Jae
PA D.D. Tech, Inc., S. Korea
SO Eur. Pat. Appl., 10 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1162250	A1	20011212	EP 2000-250175	20000606
PRAI	EP 2000-250175		20000606		

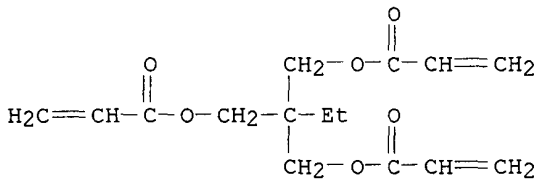
AB A polymer assemble **liq. crystal** includes less than 40 wt% of a **liq. crystal** mixt. of ferroelec. and antiferroelec. **liq. crystals** and more than 60 wt% of a polymer. The polymer is obtained by polymg. urethane acrylate **oligomer** and (meth)acrylate. A ratio of the ferroelec. **liq. crystal** to the antiferroelec. **liq. crystal** in the **liq. crystal** mixt. is about 3:1. The object of the present invention is to provide a polymer assembled **liq. crystal** that can improve response time, high contrast and optical stability of **liq. crystal** display, and which can be mixed with a polymer at a low mixing ratio.

IT **103-11-7D**, reaction product with urethane acrylate
15625-89-5D, Trimethylol propane triacrylate, reaction product with urethane acrylate
RL: DEV (Device component use); USES (Uses)
(polymer **liq. crystal** composite comprising mixt. of ferroelec. and antiferroelec. **liq. crystals** and dye used in **liq. crystal** display)

RN 103-11-7 HCAPLUS
CN 2-Propenoic acid, 2-ethylhexyl ester (9CI) (CA INDEX NAME)



RN 15625-89-5 HCAPLUS
CN 2-Propenoic acid, 2-ethyl-2-[[(1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl ester (9CI) (CA INDEX NAME)



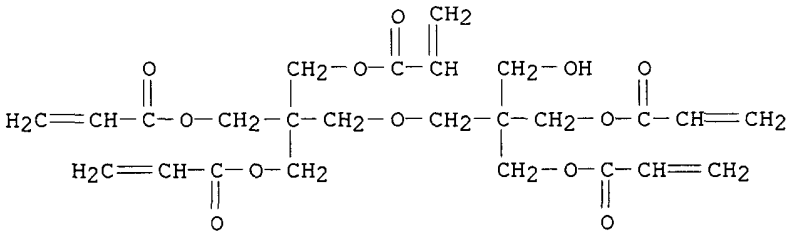
L94 ANSWER 5 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 2001:598108 HCAPLUS
DN 135:172994
TI Near infrared sensitive photopolymerizable composition
IN Galstian, Tigran; Boiko, Yuri
PA Universite Laval, Can.
SO PCT Int. Appl., 24 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001059031	A2	20010816	WO 2001-CA162	20010214
	WO 2001059031	A3	20011213		
	EP 1257613	A2	20021120	EP 2001-909359	20010214
PRAI	CA 2000-2298345	A	20000214		
	WO 2001-CA162	W	20010214		

AB Photopolymerizable compns. sensitive to near IR radiation are described which comprise a photopolymerizable monomer or **oligomer**, or a mixt. thereof, capable of forming a polymer having predetd. optical properties; a photoinitiator sensitive to near IR radiation; and a filler having optical properties selected to contrast with the optical properties of the polymer. The filler may be a **liq. crystal**, and holog. **polymer-dispersed liq.-crystal** materials produced using such fillers are also claimed. Processes for producing an optical device are described which entail providing an optical element; providing a photopolymerizable compn.; applying a layer of the photopolymerizable compn. onto the optical element; and exposing the optical element with the layer of photopolymerizable compn. thereon to near IR radiation to cause polymn. of the monomer or **oligomer**, or mixt. thereof, and formation of a recording pattern on the optical element, the recording pattern comprising areas having different densities of filler in exposed and unexposed areas of the layer, thereby obtaining an optical device having thereon areas with different optical properties.

IT **60506-81-2**, Dipentaerythritol pentaacrylate
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(near-IR sensitive photopolymerizable compns. and their use in optical component manuf.)

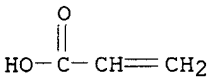
RN 60506-81-2 HCAPLUS
CN 2-Propenoic acid, 2-[[3-hydroxy-2,2-bis[[(1-oxo-2-propenyl)oxy]methyl]propoxy]methyl]-2-[[(1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl ester (9CI) (CA INDEX NAME)



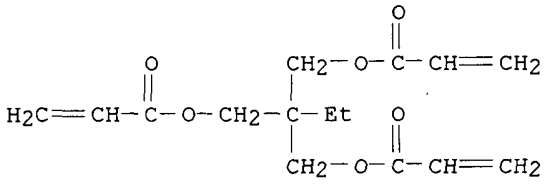
L94 ANSWER 8 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:21968 HCAPLUS
DN 130:117414
TI Holographic **polymer-dispersed liquid crystal** optical element
IN Goto, Tomohisa; Nakata, Daisaku; Saito, Gorou; Onishi, Yasuharu; Sato, Masaharu
PA NEC Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11002802	A2	19990106	JP 1997-153866	19970611
	JP 2980064	B2	19991122		
PRAI	JP 1997-153866		19970611		

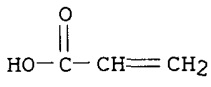
AB The title **liq. crystal** optical element comprises a **polymer-dispersed liq. crystal** light-controlling layer disposed between a transparent substrate having an electrode layer and a light-absorbing substrate having an electrode layer, wherein a dye material is fixed in the polymer and the **liq. crystal** is oriented as droplets. The fixation of the dye may be carried out by photopolymn. a polymer precursor with the dye having a (meth)acryloyl group.
IT **79-10-7DP**, Acrylic acid, hexapentenyl derivs., polymers with urethane acrylate **oligomer**
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(holog. **polymer-dispersed liq. crystal** optical element)
RN 79-10-7 HCAPLUS
CN 2-Propenoic acid (9CI) (CA INDEX NAME)



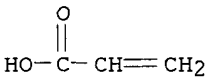
L94 ANSWER 9 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1999:7646 HCAPLUS
DN 130:174929
TI High-brightness projector using a thin film transistor-**polymer dispersed liquid crystal** light valves
AU Park, Kwansun; Han, Kwansoo; Sakong, D. S.
CS Samsung Advanced Institute of Technology, Suwon, S. Korea
SO Korea Polymer Journal (1998), 6(4), 312-317
CODEN: KPJOE2; ISSN: 1225-5947
PB Polymer Society of Korea
DT Journal
LA English
AB The **polymer dispersed liq. crystal** (**PDLC**) having continuous **liq. crystal** domains in a 3 dimensional spongy-like **polymer network** shows a light transmission-light scattering upon elec. field ON and OFF, resp. The **PDLC** film can be used as a light valve for an active matrix display. The driving voltage of the **PDLC** was <6 V, low enough to be driven by thin film transistor (TFT). The electrooptical properties of the **PDLC** film strongly depended on the temp. of panel and the phys. properties of the polymer matrix. A real moving picture-projector was developed by using the 3.1' amorphous Si TFT-**PDLC** light valves. The brightness of the projector was .apprx.2 times higher than that of TN-TFT projector.
IT **15625-89-5D**, Trimethylolpropane triacrylate, polymers with acrylate monomers and **oligomers**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(cross linking agent; high-brightness projector using a thin film transistor-**polymer dispersed liq. crystal** light valves)
RN 15625-89-5 HCAPLUS
CN 2-Propenoic acid, 2-ethyl-2-[[(1-oxo-2-propenyl)oxy]methyl]-1,3-propanediyl ester (9CI) (CA INDEX NAME)



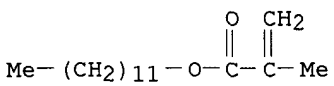
IT **79-10-7D**, Acrylic acid, esters, polymers
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(high-brightness projector using a thin film transistor-**polymer dispersed liq. crystal** light valves)
RN 79-10-7 HCAPLUS
CN 2-Propenoic acid (9CI) (CA INDEX NAME)



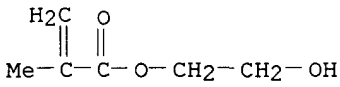
L94 ANSWER 10 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:751521 HCAPLUS
DN 128:82049
TI High transmission **polymer dispersed liquid crystals**
AU Huang, Ziqiang; Chidichimo, Giuseppe; De Filpo, Giovanni; Golemme, Attilio; Hakemi, Hassan-Ali'; Santangelo, Michele
CS Dipartimento di Chimica, Universita della Calabria, Rende, 87030, Italy
SO Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (1997), 307, 135-144
CODEN: MCLCE9; ISSN: 1058-725X
PB Gordon & Breach Science Publishers
DT Journal
LA English
AB We present evidence that **polymer dispersed liq . crystals** (**PDLC**) with high on state transparency can be obtained following two conditions: the soly. of the **liq. crystal** within the pre-polymd. resin should be low and the resin itself should not be a mixt. but a single chem. species. We prepd. **PDLC**'s according to such provisions and measured high on state transparencies. Exptl. data have also been interpreted in terms of existing light transmission theories. Results indicate that the high transparency is assocd. with a high degree of homogeneity of the polymer matrix.
IT **79-10-7**, 2-Propenoic acid, reactions
RL: DEV (Device component use); PRP (Properties); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(high transmission **polymer dispersed liq. crystals**)
RN 79-10-7 HCAPLUS
CN 2-Propenoic acid (9CI) (CA INDEX NAME)



L94 ANSWER 11 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:722949 HCAPLUS
DN 128:41501
TI Effects of material systems on the polarization behavior of holographic **polymer dispersed liquid crystal** gratings
AU Karasawa, Takeshi; Taketomi, Yoshinao
CS Display Device Development Center, Matsushita Electric Industrial Co., Ltd., Moriguchi, 570, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (1997), 36(10), 6388-6392
CODEN: JAPNDE; ISSN: 0021-4922
PB Japanese Journal of Applied Physics
DT Journal
LA English
AB This study has investigated the effects of the material systems involved in the fabrication processes on the polarization behavior of a vol. holog. grating. The diffraction efficiency of the gratings fabricated using pre-polymer/**liq. crystal** mixts. shows strong dependence on the polarization of incoming light. Depending on the materials used in the formation of a grating, the diffraction properties are such that either p- or s-polarized light is strongly diffracted while the light with the other polarization is very weakly diffracted. The magnitude of the dependence on the polarization is greatly affected by the type of monomers, **liq. crystals** and substrates. The comparison of various types of monomers added to the base pre-polymer mixts., two distinctly different types of **liq. crystals** and glass slides and indium-tin oxide (ITO) coated glass as substrates was carried out using polyester-based and urethane-based **oligomers.**
IT **142-90-5 868-77-9**, 2-Hydroxyethyl methacrylate
RL: DEV (Device component use); USES (Uses)
(monomer; polarization behavior of holog. **polymer dispersed liq. crystal** gratings using polyester-based and urethane-based **oligomers**)
RN 142-90-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, dodecyl ester (9CI) (CA INDEX NAME)



RN 868-77-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester (9CI) (CA INDEX NAME)



L94 ANSWER 13 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1997:107240 HCAPLUS
DN 126:124865
TI **Liquid crystal** display with improved wide-viewing-angles and its manufacture
IN Murai, Hideya; Suzuki, Shigeyoshi
PA Nippon Electric Co, Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08292454	A2	19961105	JP 1995-98336	19950424
	JP 2778516	B2	19980723		
	NL 1002933	A1	19961025	NL 1996-1002933	19960424
	NL 1002933	C2	19970821		
	US 5959707	A	19990928	US 1996-636986	19960424
PRAI	JP 1995-98336	A	19950424		
	JP 1995-144442	A	19950612		
	JP 1995-151326	A	19950619		
	JP 1995-273614	A	19950926		
	JP 1996-21828	A	19960112		
	JP 1996-32382	A	19960220		

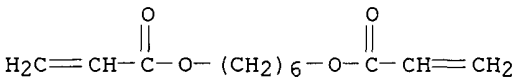
AB In the title display showing a so-called spray distortion in a twisted nematic **liq. crystal** layer, the **liq. crystal** layer contains a small amt. (0.5-5 %) of polymers. The polymers may be prepd. by polymg. photocurable monomers or **oligomers**. The title manuf. includes a process to inject the monomers or the **oligomers** into the **liq. crystal** cell and a process to shine UV-light onto the cell to form the polymers.

IT **57592-67-3**, Hexanediol diacrylate homopolymer
RL: MOA (Modifier or additive use); USES (Uses)
(polymer additive to **liq. crystal** layer)

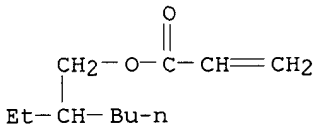
RN 57592-67-3 HCAPLUS
CN 2-Propenoic acid, 1,6-hexanediyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 13048-33-4
CMF C12 H18 O4



L94 ANSWER 14 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1996:223331 HCAPLUS
DN 124:302355
TI Light scattering properties of **polymer dispersed liquid crystals**
AU Tahata, S.; Tsumura, A.; Mizunuma, M.; Koyama, H.; Tamatani, A.; Masumi, T.
CS Mater. Electronic Devices Lab., Mitsubishi Electric Corp., Hyogo, 661, Japan
SO Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (1996), 275, 99-106
CODEN: MCLCE9; ISSN: 1058-725X
PB Gordon & Breach
DT Journal
LA English
AB The Stein-Rhodes Model (SR model) which explains light scattering by anisotropic spheres is applied to the light scattering phenomenon in **Polymer Dispersed Liq. Crystals** (**PDLC**). Comparison of Hv light scattering capability obtained by both the expt. and the theor. model reveals that, esp. in a high temp. region, the expt. provides stronger light scattering intensities than the theor. model. Observation of **PDLC** under a polarized microscope shows that the region in which a **liq. crystal** is oriented expands with the increase of temp. We assume from these results that the temp. dependence of the birefringence of a **liq. crystal** droplet is smaller than that of a bulk **liq. crystal**, which is mainly caused by the difference of **liq. crystal** orientation. For applying the SR model to **PDLC**, we must take into account the temp. dependence of **liq. crystal** orientation in the droplets.
IT **103-11-7D**, 2-Ethylhexyl acrylate, polymers with urethane diacrylate **oligomers**
RL: NUU (Other use, unclassified); USES (Uses)
(light scattering properties of **polymer dispersed liq. crystals**)
RN 103-11-7 HCAPLUS
CN 2-Propenoic acid, 2-ethylhexyl ester (9CI) (CA INDEX NAME)

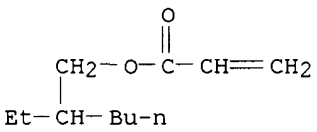


L94 ANSWER 15 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1995:638333 HCAPLUS
DN 123:22347
TI **Liquid-crystal** optical device
IN Yamamoto, Masao
PA Matsushita Electric Ind Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07013142	A2	19950117	JP 1993-159259	19930629
	JP 3337521	B2	20021021		
PRAI	JP 1993-159259		19930629		

AB A **liq.-crystal** optical device showing excellent elec. charge retention is manufd. by introducing a compn. comprising a **liq. crystal** compn. dispersed in a polymerizable compn. into a cell comprising a pair of electrode-bearing substrates and a resin sealing layer (also serving as a spacing layer), applying an elec. field across the cell, and polymg. the polymerizable compn. after the removal of the applied elec. field.

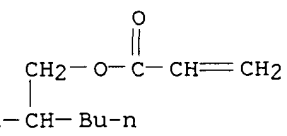
IT **103-11-7**, 2-Ethylhexyl acrylate
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(**liq.-crystal** display device manuf. by polymn. of compns. contg.)
RN 103-11-7 HCAPLUS
CN 2-Propenoic acid, 2-ethylhexyl ester (9CI) (CA INDEX NAME)



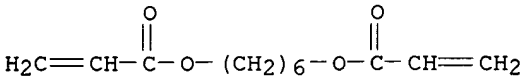
L94 ANSWER 16 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1994:446750 HCAPLUS
DN 121:46750
TI Electrooptical **liquid crystal** systems
IN Nolan, Patrick; Coates, David
PA Merck Patent G.m.b.H., Germany
SO Eur. Pat. Appl., 21 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 564869	A1	19931013	EP 1993-104448	19930318
	R: DE, FR, GB				
	JP 06208107	A2	19940726	JP 1993-73977	19930331
	US 5476611	A	19951219	US 1993-41422	19930331
PRAI	EP 1992-105531		19920331		

OS MARPAT 121:46750
AB The invention relates to an electrooptical system which between 2 electrode layers contains a **polymer dispersed liq.-crystal** (**PDLC**) film comprising a **liq. crystal** mixt. forming microdroplets in an optically isotropic, transparent polymer matrix, in which 1 of the refractive indexes of the **liq. crystal** mixt. is matched to the refractive index of the polymer matrix, and which in 1 of the 2 switching states has reduced transmission compared with the other state independent of the polarization of the incident light. The precursor of the **PDLC** film comprises (a) 30-85% of a **liq. crystal** mixt. contg. .gtoreq.1 compds. I [Z1 and Z2, are a single bond, -CH2CH2-, -COO-, -OCO- or -C.tplbond.C-; T1, T2 = trans-1,4-cyclohexylene, 1,4-phenylene, 2-fluoro-1,4-phenylene, 3-fluoro-1,4-phenylene, 2,3-difluoro-1,4-phenylene, 3,5-difluoro-1,4-phenylene and 1 of T1 and T2 is also pyrimidine-2,5-diyl, pyridine-2,5-diyl or trans-1,3-dioxane-2,5-diyl; X1, X2 = H, F; Q = CF2, OCF2, C2F2, OC2F2, single bind.; Y = H, F, CN, Cl; n = 0-2; R = alkyl in which .gtoreq.1 adjacent CH2 may be replaced with O or CH:CH]; (b) 15-68% of the precursor of the polymer matrix at least comprising: component A contg. .gtoreq.5% of .gtoreq.1 of at least difunctional thiol monomer and/or **oligomer**; component B contg. .gtoreq.10% of .gtoreq.1 of at least difunctional monomer and/or **oligomers** of the ene type; a component C contg. at least 3% of .gtoreq.1 monofunctional monomers and/or **oligomers** of the ene type with a molar mass of <250 g/mol; optionally a component D contg. polymerizable compds. other than ene-type or thiol-type compds.; and (c) 0.1-5% of a radical photoinitiator with the mass ratios given under a, b and c being related to the mass of the precursor of the **PDLC** film and the mass ratios of the components A, B and C relating to the mass of the precursor of the polymer matrix.
IT **103-11-7**, Acrylic acid, 2-ethylhexyl ester **13048-33-4**, Hexanediol diacrylate **74092-49-2**, Ebecryl 210
RL: USES (Uses)
(**polymer dispersed liq. crystal** system contg.)
RN 103-11-7 HCAPLUS
CN 2-Propenoic acid, 2-ethylhexyl ester (9CI) (CA INDEX NAME)



RN 13048-33-4 HCAPLUS
CN 2-Propenoic acid, 1,6-hexanediyl ester (9CI) (CA INDEX NAME)

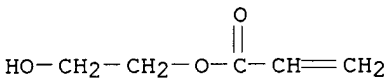


RN 74092-49-2 HCAPLUS

L94 ANSWER 17 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1994:311783 HCAPLUS
DN 120:311783
TI **Polymer-dispersed liquid-crystal** film and its manufacture
IN Tabei, Tatsuya; Shindo, Tadafumi; Maeda, Hiromi; Ando, Masayuki
PA Dainippon Printing Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05113557	A2	19930507	JP 1991-299544	19911021
JP 3223455	B2	20011029		
PRAI JP 1991-299544		19911021		

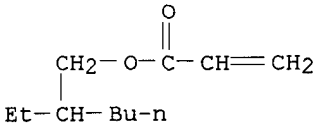
AB In the title film, a **liq. crystal** is dispersed in an ionizing radiation-cured resin matrix in the form of particles. The title film is manufd. by dispersing a **liq. crystal** in a mixt. of radiation-curable monomers, **oligomers**, and polymers by using a surfactant and irradiating with an ionizing radiation. This film is well responsive to elec. field and heat and shows high contrast and good stability.
IT **818-61-1D**, reaction product with isophorone diisocyanate and hydroxy-terminated silicone
RL: USES (Uses)
(**liq. crystals** dispersed in, for display devices)
RN 818-61-1 HCAPLUS
CN 2-Propenoic acid, 2-hydroxyethyl ester (9CI) (CA INDEX NAME)



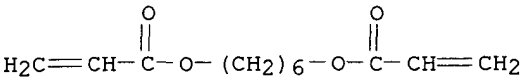
L94 ANSWER 19 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1993:659693 HCAPLUS
DN 119:259693
TI Electrooptical system, its preparation, and **polymer-dispersed liquid-crystal** precursors for it
IN Coates, David; Nolan, Patrick
PA Merck Patent G.m.b.H., Germany
SO PCT Int. Appl., 56 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9309202	A1	19930513	WO 1992-EP2461	19921028
	W: JP, KR, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE				
	EP 565688	A1	19931020	EP 1992-922759	19921028
	R: DE, FR, GB				
	JP 06504145	T2	19940512	JP 1992-508138	19921028
	US 5323251	A	19940621	US 1992-960469	19921216
PRAI	EP 1991-710039		19911101		
	EP 1992-104091		19920310		
	WO 1992-EP2461		19921028		

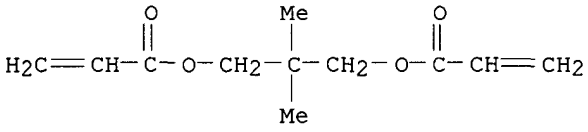
OS MARPAT 119:259693
AB The precursor comprises (a) a **liq.-crystal** mixt. contg. .gtoreq.1 compd. of the general formula I, where Z1,Z2 = single bond, CH2CH2, COO, OCO, or C:C; A1,A2 = trans-1,4-cyclohexylene, 1,4-phenylene, 3-fluoro-1,4-phenylene, 2,3-difluoro-1,4-phenylene, or 3,5-difluoro-1,4-phenylene, and A1 or A2 may also be pyrimidin-2,5-diyl, pyridin-2,5-diyl, or trans-1,3-dioxan-2,5-diyl; X1,X2 = H or F; Q = CF2, OCF2, C2F4, OC2F4, or single bond; Y = H, F, Cl, or CN; n = 0-3; and R = C1-13 alkyl in which 1 or 2 nonadjacent CH2 groups may be replaced by O and/or CH:CH, 30-85; (b) a polymer matrix comprising a component A contg. 0.1-35 wt.% .gtoreq.1 difunctional thiol monomer and/or **oligomers**, a component B contg. 5-95 wt.% .gtoreq.1 monomer of the ene type, and a component C contg. 2-55 wt.% .gtoreq.1 **oligomer** of the ene type 10-68; and (c) a radical photoinitiator 0.1-5 wt.%.
IT **103-11-7 13048-33-4**
RL: USES (Uses)
(**polymer-dispersed liq.-crystal** precursors contg., for electrooptical systems)
RN 103-11-7 HCAPLUS
CN 2-Propenoic acid, 2-ethylhexyl ester (9CI) (CA INDEX NAME)



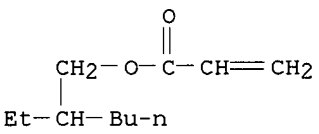
RN 13048-33-4 HCAPLUS
CN 2-Propenoic acid, 1,6-hexanediyl ester (9CI) (CA INDEX NAME)



L94 ANSWER 20 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1993:179866 HCAPLUS
DN 118:179866
TI New rapid response **polymer dispersed liquid crystal** material
AU Zhang, Guo Min; Hong, Zhu; Zhou, Changxing; Wu, Baogang; Lin, Jacob W.
CS Polytronix, Inc., Richardson, TX, 75081, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (1992), 1815(Disp. Technol.), 233-7
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English
AB A new **polymer dispersed liq. crystal** (**PDLC**) material with rapid response time of 1 to 2 ms at operating voltage of 40 V is described. The improved response time at lower operating voltage was achieved by selection of suitable monomer or **oligomer** with proper mol. structure combining with unique type of **liq. crystal** material and cured with UV light. This material has tested continues over a year and still functions normally.
IT **2223-82-7**, Neopentyl glycol diacrylate
RL: USES (Uses)
(**polymer dispersed liq. crystal** material prepd. by photocuring mixt. contg., for application as optical display with rapid response time)
RN 2223-82-7 HCAPLUS
CN 2-Propenoic acid, 2,2-dimethyl-1,3-propanediyl ester (9CI) (CA INDEX NAME)



L94 ANSWER 21 OF 21 HCAPLUS COPYRIGHT 2003 ACS
AN 1992:116986 HCAPLUS
DN 116:116986
TI Preparation and characteristics of new reverse mode film of **polymer dispersed liquid crystal** type
AU Gotoh, Tomohisa; Murai, Hideya
CS Funct. Org. Mater. Res. Lab., NEC Corp., Kawasaki, 216, Japan
SO Applied Physics Letters (1992), 60(3), 392-4
CODEN: APPLAB; ISSN: 0003-6951
DT Journal
LA English
AB A reverse mode operation is achieved in a **polymer dispersed liq. crystal** (**PDLC**) film by a novel methodol. A mixt. of a dual frequency addressable **liq. crystal** (crossover frequency (fc): 13 kHz at 298 K), an acrylic monomer, and an acrylic **oligomer** was irradiated by UV light under the application of an elec. field [50 V, 100 Hz(.mchlt.fc)] to give a reverse mode **PDLC** film. The film thus prepd. shows 95% transmittance in the absence of an applied voltage (OFF state), while the transmittance decreases to 5% by applying 50 V at 50 kHz (>fc) (ON state). Upon removal of the applied voltage, the film transmittance returns to 95%. The response time (the ON time: 24 ms and the OFF time: 74 ms) are similar to those of normal mode **PDLC** films.
IT **103-11-7**, 2-Ethylhexyl acrylate
RL: USES (Uses)
(photopolymg. compn. contg., in prepn. of reverse mode **polymer -dispersed liq. crystal** display film)
RN 103-11-7 HCAPLUS
CN 2-Propenoic acid, 2-ethylhexyl ester (9CI) (CA INDEX NAME)



Search strategies for Case *No. 09979524*.
Search done in WEST. Searches done 04/20-29/03
Ex. Andre' Stevenson

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USPT

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USPT

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USPT

(6259500) and (insulating or insulation$2 or insulate$2) and (insulating or insulation$2 or insulate$2) near layer$2

USPT

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USPT

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(6259500) and (inslualte$2 or insulation$2 or insulation)

USPT

(6259500) and photoresist$2

USPT

6259500

USPT

(6259500) and amorphous$2 and metal$2 and data

USPT

(6259500) and amorphous$2 and metal$2

USPT

(6259500) and (gate$2 or data$2) and amorphous$2

USPT

6259500

USPT

((6259500)and exposure$2 near process$2 and black near matrix$2 and exposure$2) and pixel near (electrode$2 or region$2) and (gate$2 or data$2)

USPT

(6259500) and pixel near (electrode$2 or region$2) and (gate$2 or data$2)

USPT

(6259500) and exposure$2 near process$2 and black near matrix$2 and exposure$2

USPT

(6259500) and exposure$2 near process$2 and black near matrix$2

USPT

(6259500) and black near matrix$2 and first near substrate$2 and second near substrate$2

USPT
(6259500) and black near matrix$2 and expousure$2 near process$2 and first near substrate$2 and second near substrate$2

USPT
((6259500)and first near substrate$2 and second near substrate$2) and ((liquid near crystal) or LCD)

USPT
(6259500) and first near substrate$2 and second near substrate$2

USPT
6259500

USPT
(6266113) and (cellulose or ester$2)

USPT
(6452650) and (cellulose or ester$2)

USPT
(6452650) and (polymer$2 or resin$2) and (ratio$ or percentage$2)

USPT
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(6452650) and (polymer$2 or resin$2)

USPT
(6266113) and (polymer$2 or resin$2)

USPT
6266113

USPT
6452650

USPT
(6266113) and polymer$2

USPT
6266113

USPT
(6452650) and polymer$2

USPT
(6452650) and index$2 near (refract$3 or refractive$2)

USPT
((6452650)and light$2 and (scattering$2 or scatter$2 or reflect$2 or reflection or transmittance$2 or transmittable$2 or refract$3 or refractive$2)) and index$2 near (refract$3 or refractive$2)

USPT
((6452650)and light$2 and (scattering$2 or scatter$2 or reflect$2 or reflection or transmittance$2 or transmittable$2 or refract$3 or refractive$2)) and index$2

USPT
(6452650) and light$2 and (scattering$2 or scatter$2 or reflect$2 or reflection or transmittance$2 or transmittable$2 or refract$3 or refractive$2) 6452650) and light$2 and (scattering$2 or scatter$2 or reflect$2 or reflection or transmittance$2 or transmittable$2)

USPT
(6452650) and light$2 and (scattering$2 or scatter$2 or reflect$2 or reflection or transmittance$2 or transmittable$2)

USPT
(6452650) and light$2

USPT
6452650

USPT
(((6452650) and droplet near (phase$2 or structure$2) and volume$2)) and size$2 and droplet$2 and (size$2 or diameter$2)

USPT
(((6452650) and droplet near (phase$2 or structure$2) and volume$2)) and size$2 and droplet$2

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USPT
(((6266113) and droplet near (phase$2 or structure$2) and (volume$2 or percentage$2))) and size$2

USPT

(6452650) and (isotropic$2 or isotropically$2)

USPT
(6266113) and droplet near (phase$2 or structure$2) and (volume$2 or percentage$2)

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(6266113) and droplet near (phase$2 or structure$2) and droplet$2

USPT
(6266113) aand droplet near (phase$2 or structure$2) and droplet$2

USPT
(6452650) and angle$2 and (scattering$2 or scatter$2 or reflect$2 or reflection) near (angle$2 or direction$2)

USPT
(6266113) and angle$2 and (scattering$2 or scatter$2 or reflect$2 or reflection) near (angle$2 or direction$2)

USPT
(6266113) and angle$2 (scattering$2 or scatter$2 or reflect$2 or reflection) near (angle$2 or direction$2)

USPT
(6266113) and angle$2

USPT
(6266113) and fig.3

USPT
(6266113) and fig3

USPT
(6266113) and ((6266113)and polymer$2 and refractive$2 near index$2) and ((6266113)and (multiple$2 or plural$2 or plurality or two) near polymer$2 and refractive$2 near index$2)

USPT
(5376302) and (scattering$2 or scatter$2 or reflect$2 or reflection) near angle$2

USPT
(5958290) and (scattering$2 or scatter$2 or reflect$2 or reflection) near angle$2

USPT
(6266113) and (scattering$2 or scatter$2 or reflect$2 or reflection) near angle$2

USPT
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USPT
(6452650) and (scattering$2 or scatter$2) near angle$2

USPT
(6266113) and (scattering$2 or scatter$2) near angle$2

USPT
(6266113) and (refractive or refract$3) near index$2 and droplet near (phase$2 or structure$2)

USPT
(6266113) and (refractive or refract$3) near index$2 droplet near (phase$2 or structure$2)

USPT
((((((liquid near crystal) or LCD) and droplet near (phase$2 or structure$2))and polymer$2 and (refractive or refract$3) near index$2) and light$2 near (scattering$2 or scatter$2))) and (refractive or refract$3) near index$2

USPT
(6452650) and (multiple$2 or plural$2 or plurality or two) near polymer$2 and refractive$2 near index$2

USPT
6452650

USPT

(6452620) and (multiple$2 or plural$2 or plurality or two) near polymer$2 and refractive$2 near index$2

USPT
6452620

USPT
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USPT
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USPT
(5958290) and (multiple$2 or plural$2 or plurality or two) near polymer$2 and refractive$2 near index$2

USPT
(6266113) and (multiple$2 or plural$2 or plurality or two) near polymer$2 and refractive$2 near index$2

USPT
(6266113) and polymer$2 and refractive$2 near index$2

USPT
(6266113) and droplet near (phase$2 or structure$2) and polymer$2 and light$2 near (scattering$2 or scatter$2) and (scattering$2 or scatter$2) near (sheet$2 or layer$2)

USPT
5376302
USPT
5958290

USPT
6266113

USPT
(((((liquid near crystal) or LCD) and droplet near (phase$2 or structure$2))and polymer$2 and (refractive or refract$3) near index$2)and light$2 near (scattering$2 or scatter$2)) and (scattering$2 or scatter$2) near (sheet$2 or layer$2)

USPT
((((liquid near crystal) or LCD) and droplet near (phase$2 or structure$2))and polymer$2 and (refractive or refract$3) near index$2) and light$2 near (scattering$2 or scatter$2)

USPT
(((liquid near crystal) or LCD) and droplet near (phase$2 or structure$2)) and polymer$2 and (refractive or refract$3) near index$2

USPT
((liquid near crystal) or LCD) and droplet near (phase$2 or structure$2)

USPT
6509942